PRELIMINARY ASSESSMENT

of

DEVIL'S SWAMP LAKE

(LAD985202464)

Prepared By

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Region 6

April 15, 1992

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FROM: Jeffrey E. Patterson, Site Manager, ICF Technology, Inc.

DATE: April 15, 1992

REF: ARCS Contract No. 68-W9-0025
Work Assignment No. 29-6JZZ

SUBJ: Preliminary Assessment
Devil's Swamp Lake, Baton Rouge, East Baton Rouge Parish, Louisiana
LAD985202464

Attached is the Preliminary Assessment Report of the Devil's Swamp Lake site in Baton Rouge, East Baton Rouge Parish, Louisiana.

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1.0 INTRODUCTION

The Region 6 ARCS contractor, MK-Environmental and ICF Technology, Inc. (MK/ICF) was tasked by the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0026 and Work Assignment No. 29-6JZZ to conduct the Preliminary Assessment (PA) of Devil's Swamp Lake (LAD985202464) in Baton Rouge, East Baton Rouge Parish, Louisiana.

The purpose of a PA is to determine whether further investigations are warranted and provide a preliminary screening of sites to facilitate EPA's assignment of site priorities.

The PA investigation focuses on determining CERCLA eligibility, reviewing available file information, documenting the presence and type, or absence of uncontained or uncontrolled hazardous substances on-site and in the collection of area receptor and site characteristic information.

2.0 SITE DESCRIPTION AND OPERATIONAL HISTORY

This section addresses operational history, waste containment, hazardous substances identification, and regulatory status of the facility.

2.1 SITE LOCATION

Devil's Swamp Lake is located within the city limits of Scotlandville, Louisiana near the Baton Rouge Turning Basin in Section 47, Township 5 South, Range 1 West and Sections 55 and 59 Township 6 South, Range 1 West (Ref. 1). The geographical coordinates of the site are 30°33'35" north latitude and 91°13'30" west longitude (Figure 1) (Ref. 1). The site is a man-made oxbow-shaped lake in a heavily industrialized area near the Mississippi River.

Devil's Swamp Lake was brought to the attention of the U.S EPA by a concurrent resolution of the State of Louisiana Senate and House of Representatives (Ref. 17).

2.2 OPERATIONAL HISTORY

Devil's Swamp Lake is a man-made oxbow lake excavated from Devil's Swamp in 1973 (Ref. 2, p. 1). It is surrounded by bottom lands and exhibits all the characteristics of a natural bottom land lake. The lake is roughly "U" shaped and is approximately 1.8 miles in length and at its widest point measures approximately 574 feet. Its average width is 377 feet. Depths in the lake reach a maximum of 23 feet and the average midstream depth is 12 feet (Ref. 9, p. 1). It is located approximately 1/4 mile to the northwest of the Baton Rouge Harbor Canal (Ref. 1). Property owners of the land surrounding and including the lake are Mr. Dave Ewell, Jr., Mr. Layton Ewell (504-775-0928), East Baton Rouge Port Commission (504-389-4207), Rollins Environmental Services, Inc. (504-778-1234), Agway Systems, Inc. (504-778-1440) and Kansas City Southern Lines (504-379-4200) (Ref. 6)

The Brookline section of the Petro Processors Inc. (PPI) National Priorities List (NPL) site (LAD057482713) is located approximately 1.5 miles upgradient to the northwest and the Scenic Highway section of this NPL site is located approximately 2 miles to the north of Devil's Swamp Lake

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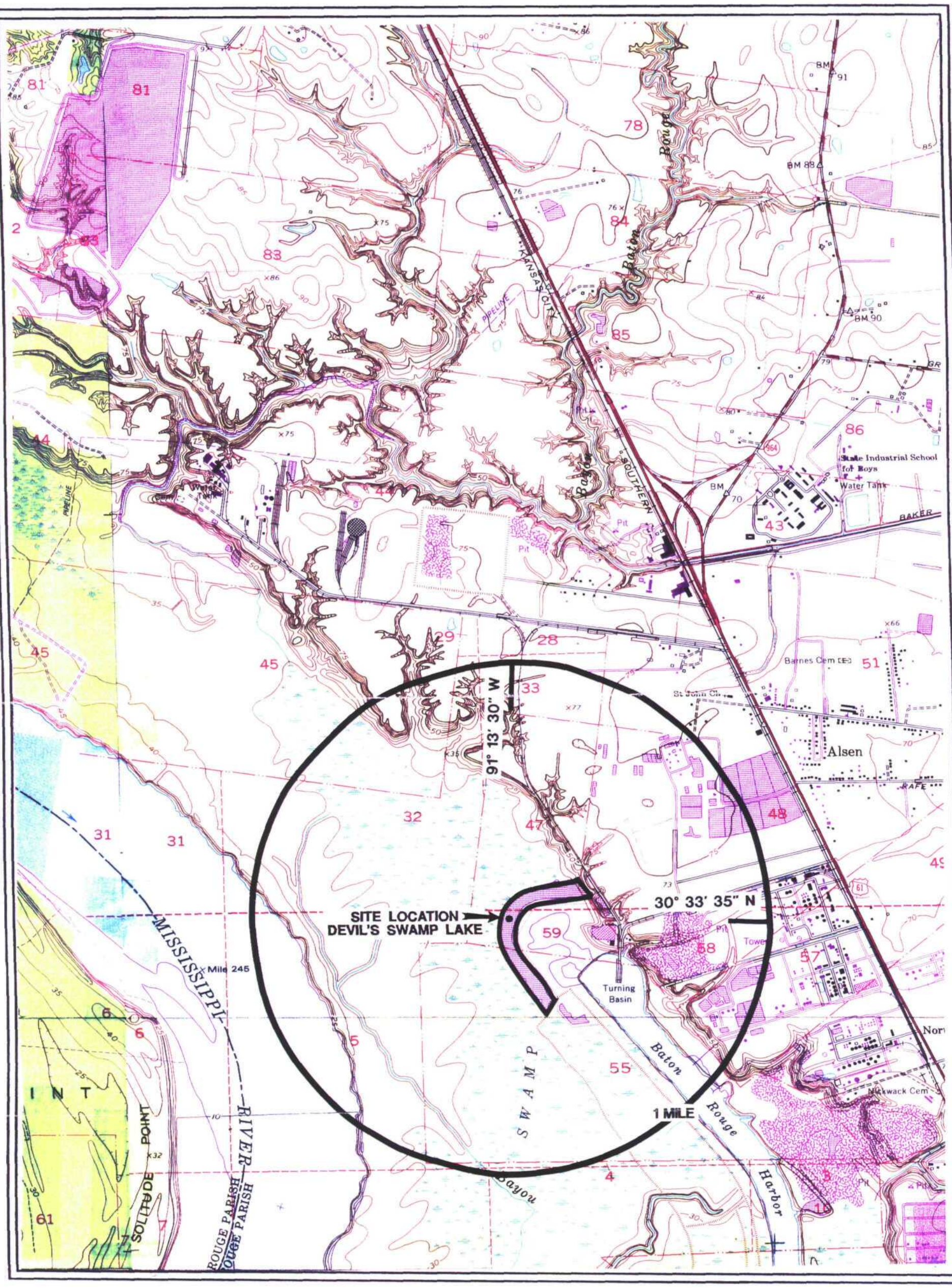

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0 2000

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FIGURE 1

SITE LOCATION MAP

DEVIL'S SWAMP LAKE
BATON ROUGE,
EAST BATON ROUGE PARISH, LOUISIANA

CERCLIS #LAD985202464

QUADRANGLE LOCATION

WALLS, LA. 1980
SCOTLANDVILLE, LA. 1980

(Ref. 1). The Devil's Swamp Site (LAD981155872) is located approximately 1 mile to the northwest of Devil's Swamp Lake (Ref. 10, p. 6) (Figure 2).

The waste streams from the Petro Processors Site have been identified in Devil's Swamp and Devil's Swamp Lake (Ref. 7; Ref. 8). Devil's Swamp Lake is subject to sheet flow from Bayou Baton Rouge through Devil's Swamp (Ref. 2, p. 1) and analyses of sediments from the lake and tributary sloughs and bayous indicate that the sources of some contaminants in the lake is the Petro Processors Inc. site located on the northern end of Devil's Swamp (Ref. 7, p. 2; Ref. 22, p. 4).

The lake is also subject to storm-water runoff from Agway Industries, Baton Rouge Port Commission property, Allied Chemical Corporation and Rollins Environmental. Wastewater is discharged from NPDES Outfall 001 of the Rollins Environmental Services facility, and flows in a generally west to southwesterly direction via an intermittent tributary of Devil's Swamp Lake. Rollins Environmental is a suspected source of polychlorinated biphenyls (PCBs) in lake sediment and fish tissue (Ref. 2, p. 3). Additionally, the lake is subject to seasonal backwater flooding from the Mississippi River (Ref. 2, p. 1).

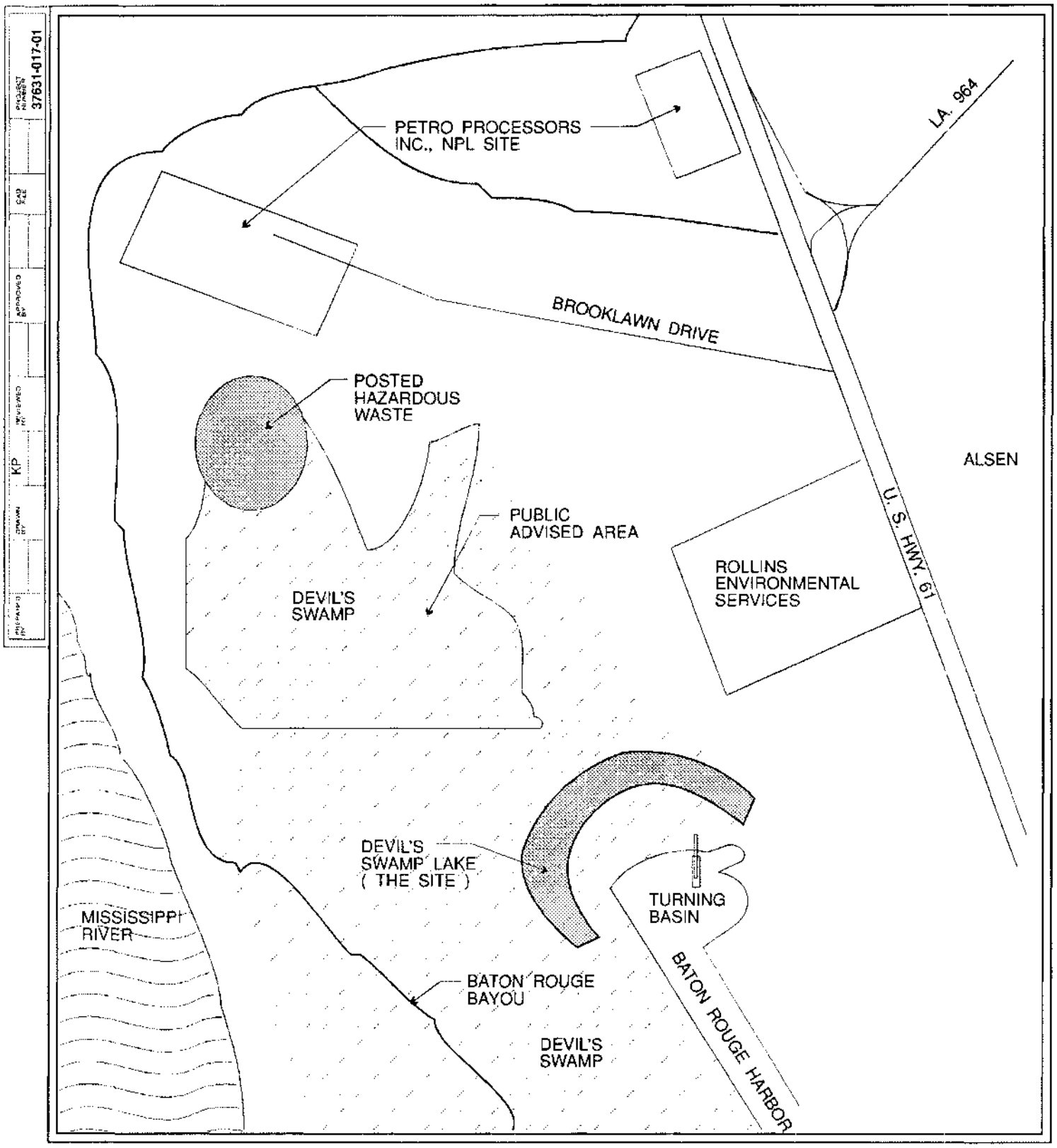
2.3 WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION

Because the site is a surface water body there are no wastes generated, stored or handled in or on it. The lake is affected by run-off sources in an industrial area (Ref. 2; Ref. 4; Ref. 7; Ref. 8; Ref. 9). Waste sources at the site are contaminated sediments (Ref. 2; Ref. 9).

In 1980, a field survey team from the Louisiana Department of Environmental Quality (LDEQ) observed that water samples taken from the bottom of the lake showed very dark water that exhibited the "chemical" smell characteristic of the Rollins effluent. The bottom itself, especially near the outfall end of the lake, was greatly impacted. Any time the bottom was disturbed, oil bubbled to the surface. Mud samples taken from the effluent end of the lake were black, oily and exhibited the smell mentioned above. The mud samples at the lower end of the lake were similar but not as evidently impacted. The LDEQ personnel expressed the opinion that the effluent upon entering the lake dropped to the bottom and did not completely mix (Ref. 9, p. 2).

Analyses of sediment samples collected by LDEQ in the lake bed and various channels within the watershed of the lake was performed in 1980. The sediment samples were analyzed for priority pollutants and showed "a number of chemicals at levels that could be considered typical for aquatic systems subject to non-point and point source surface and atmospheric inputs from an urban/industrial area" (Ref. 2, p. 2). Compounds detected included polynuclear aromatic hydrocarbons (PAHs) and chlorobenzenes at low parts per billion (ppb) to parts per million (ppm) levels. The concentrations detected were not considered alarming by LDEQ personnel; however, a wide variety of chemicals were detected and a potential for accumulation for some of these was noted in 1980. No pesticides or PCBs were detected in 1980. Water and fish tissue samples collected in 1980 had fewer compounds detected at lower concentrations than the sediment samples (Ref. 2, p. 2).

A second LDEQ sampling event occurred in 1985, when additional sediment samples were collected and analyzed. These analyses had similar results to the 1980 sample analyses. A significant difference in the 1985 samples was the detection of PCBs at concentrations up to 4 ppm in sediments from the northeastern end of the lake. This end of the lake receives the Rollins effluent.



NOT TO SCALE

FIGURE 2

SITE SKETCH

DEVIL'S SWAMP LAKE
BATON ROUGE,
EAST BATON ROUGE PARISH, LOUISIANA

CERCLIS #LAD985202464

PCB concentrations in the sediments declined with distance away from the effluent entry point to 0.117 ppm at the opposite end of the lake oxbow. PCBs were also detected at a concentration of 4.5 ppm in the Rollins effluent channel sediments at a point approximately midway between the lake and the Rollins property (Ref. 2, p. 2). These findings provided circumstantial evidence that Rollins was the probable source of PCBs in Devil's Swamp Lake. The levels found were not deemed to be an immediate threat to public health; however, the LDEQ believed that PCB concentrations did represent a threat to the aquatic ecosystem of the lake through bioaccumulation (Ref. 2, p. 3).

The results of sediment samples collected during a third investigation by LDEQ in 1986, at the same locations as the 1985 investigation, confirmed the presence of PCBs in Devil's Swamp Lake in the low ppm range and in the Rollins effluent channel sediments at up to 14.2 ppm. Samples collected from drainage ditches entering the lake from sources other than Rollins, indicated levels that approximate background concentrations of PCBs, several orders of magnitude lower than the results for the Rollins channel. According to LDEQ, these findings indicate Rollins to be the source of the PCBs accumulating in Devil's Swamp Lake (Ref. 2, p. 3).

Rollins discharges under authority of NPDES permit LA0038245, which limits PCBs in the effluent to a maximum of 35 ppb. Effluent monitoring data submitted by Rollins for the period of October 1980, through January 1985, do not indicate any PCB levels in excess of the method detection limit (MDL) of up to 36 ppb (Ref. 2, p. 3). State permit WP0413 was proposed in 1984, which required more frequent monitoring and the same limits for Rollins Outfall 001 (Ref. 2, p. 4). According to the LDEQ, the data indicate that the lake is acting as a reservoir or "sink" for PCBs even though their input is possibly low level (Ref. 2, p. 4).

In March 1987, LDEQ analyses of fish tissue samples collected in Devil's Swamp Lake showed PCB contamination which approached the U.S. Food and Drug Administration "action level" of 5 ppm for PCBs in edible portions of fish and other seafood (Ref. 3, p. 1). In June 1987, further analyses of the March 1987 samples and additional samples lead LDEQ to conclude that the original fish tissue results were suspect. The June 1987 results found PCB concentrations in fish tissues to be in the range of 0.1 to 0.6 ppm. The June results also confirmed the presence of hexachlorobenzene (HCB) and hexachloro-1,3-butadiene (HCBD). These chemicals were suspected earlier but were not found in the March 1987 results. LDEQ concluded in June 1987 that PCB levels in fish tissue from the lake, although of concern, did not represent a situation as potentially serious as other nearby sites. HCB and HCBD concentrations in fish tissue samples were said to exceed the "emergency guidelines" (0.06 ppm) utilized by the Louisiana Department of Health and Human Resources (LDHHR) and LDEQ in assessing the seafood contamination in the Calcasieu estuary (Ref. 4, p. 1).

LDEQ personnel expressed the opinion based on 1985 and 1986 investigations in the Devil's Swamp watershed, that the source of HCB and HCBD contamination was the Petro Processors Inc. site. Analyses of soil and sediment from drainage tributaries of other potential sources in the area did not indicate HCB and HCBD contamination (Ref. 4, p. 2). This opinion is further supported by the EPA Sampling Inspection (SI) of Devil's Swamp conducted by the EPA Field Investigation Team (FIT) in 1985. Sediment and water samples collected at this time showed contamination by hexachlorobutadiene and hexachlorobenzene in Devil's Swamp downgradient of the PPI site (Ref. 10, pp. 4-5).

EPA and LDEQ file material does not indicate containment structures for surface water overflow or subsurface seepage exist at Devil's Swamp Lake. Since the lake was not intended to contain wastes, it is unlikely that containment structures exist.

2.4 REGULATORY STATUS/ACTIVITIES

Based on available information, Devil's Swamp Lake appears to be a CERCLA eligible site. Several issues which may influence further investigation at this site are: the status of nearby sites which impact the lake; Rollins Environmental may come under the jurisdiction of RCRA, since it is an active site; and decisions or agreements reached in connection with the PPI NPL site may have some bearing on the future regulatory status of Devil's Swamp Lake.

Several regulatory investigations have occurred at Petro Processors Inc., Devil's Swamp (also known as the Ewell Property) and Devil's Swamp Lake. In 1980, the Water Pollution Control Division (WPCD) of LDEQ conducted an inspection and water quality tests of the lake (Ref. 9). In 1986 and 1987, the Office of Water Resources (OWR) of LDEQ collected samples of sediment and fish tissue samples in the lake and its tributaries (Ref. 2; Ref. 3; Ref. 4; Ref. 7). The results of these investigations were that LDEQ personnel believed that PCB contamination in the sediments and fish of Devil's Swamp Lake was due to the Rollins facility and HCB and HCBD contamination was due to migration from the PPI site via Devil's Swamp and Baton Rouge Bayou. Prior to this report, EPA investigations in the area focused on the PPI site and Devil's Swamp. Devil's Swamp Lake has been sampled by LDEQ with the assistance from the EPA FIT team, in connection with the Devil's Swamp investigation.

In 1987, LDHHR recommended to LDEQ that Devil's Swamp Lake be posted against fishing as quickly as possible. They also recommended issuance of an advisory, warning the public against fishing or consuming fish from that area (Ref. 5). The posting of the lake with signs warning against swimming in and the taking and consuming of fish and other aquatic organisms from the lake was completed in October of 1987. A major portion of Devil's Swamp north of Devil's Swamp Lake and surrounding the Petro Processors Inc. site had previously been posted by LDEQ advising the public of the chemical contamination in the swamp (Ref. 7, pp. 1-2).

In December 1991, the ARCS contractor attempted a drive-by visual inspection of Devil's Swamp Lake. The team was not able to view the lake because it is in a no trespassing area associated with the Baton Rouge Harbor. The team noted the numerous industrial facilities in the area and noted that there are no residents within 1 mile of the site.

3.0 PATHWAY ASSESSMENT

This section characterizes the environmental pathways and associated targets of contaminant migration from the facility.

3.1 GROUND WATER PATHWAY

3.1.1 Ground Water Characteristics

No site specific studies of ground water and geology have been located in the immediate vicinity of the site. Regional geologic and hydrogeologic sources state that the geologic sequence underlying this section of southeastern Louisiana consists of a complex series of alternating and lenticular beds of sand or clay. The Baton Rouge area is underlain by a complex sequence of continental and marine sediments (Ref. 29, p. 9). The "1,200" foot sand is one of the major water producing aquifers in the Baton Rouge area. The aquifer has a maximum thickness of 200 feet (Ref. 20, p. 35). The shallowest public supply well is 1,300 feet deep and screened in the "1,200" foot sand (Ref. 26). For these reasons the aquifer of concern in the area is the "1,200" foot sand. However, there are a number of aquifers above and below the "1,200" foot sand. These include the "400 foot", "600 foot", "800 foot", "1,000 foot", "1,500 foot", "1,700 foot", "2,000 foot", "2,400 foot" and "2,800 foot" sands. Other aquifers in the area include the alluvial deposits and shallow pleistocene deposits (Ref. 29, p. 9). Fresh ground water is encountered at depths of approximately 2,800 feet below ground surface (Ref. 9, p. 11). Ground water flow directions in Louisiana, in all aquifers, are affected by pumpage which has caused the northward movement of saltwater towards areas of heavy pumping. Local ground water gradients are dependent on pumpage, precipitation and flow of the Mississippi River (Ref. 29, p. 2).

Alluvial Deposits

The alluvial deposits of recent and Pleistocene Age are limited to the floodplain of the Mississippi River. Devil's Swamp Lake is in the floodplain of the river and can be assumed to be underlain by alluvial deposits. The alluvial deposits consist of approximately 80 percent water bearing sands and gravels and 20 percent silt and clay. In the floodplain area, the deposits range in thickness from 250 feet in the northern West Baton Rouge Parish to 600 feet in the south central part of East and West Baton Rouge Parishes. Although the alluvial deposits pinch out at the edge of the Prairie Terrace, the alluvial aquifer is in direct contact with the "400 foot" aquifer of earlier Pleistocene Age (Ref. 29, p. 9). The direction of flow of the alluvial aquifer varies depending on the flow of the Mississippi River. During periods of high river levels, the river recharges the alluvial aquifer During low flow periods the alluvial aquifer flows into the river (Ref. 29, p. 11). In 1959, it was reported that many domestic, stock and irrigation wells were screened in the alluvial sands. Industries in East Baton Rouge Parish also reportedly used the alluvial sands to obtain cooling water (Ref. 29, p. 16). Current wells screened in the alluvial aquifer in the area of the site have not been determined.

Shallow Pleistocene Deposits

Shallow Pleistocene aquifers underlie part of the Prairie Terrace region of East Baton Rouge Parish. The shallow Pleistocene deposits usually are within 200 feet of the surface except in the extreme southeastern corner of the two Baton Rouge parishes, where these sands extend to a depth of 450 feet below land surface. The shallow Pleistocene deposits are irregular in occurrence and thickness. The sand is medium coarse grained (Ref. 29, p 18). No wells which draw from the shallow Pleistocene deposits were identified in the area; however, on a regional basis the Pleistocene deposits are a source for domestic, industrial and irrigation use (Ref. 29, p. 21).

"400 Foot" Sand

The "400 foot" sand (aquifer) of the Baton Rouge area, which consists of several individual but connected sands, underlies East Baton Rouge Parish and much of West Baton Rouge Parish. The thickness of this unit ranges from 50 to 300 feet. This aquifer ranges from 75 to 200 feet thick but is lenticular and is divided into two recognizable sands. The "400 foot" sand in some places is connected with the alluvial deposits or the "600 foot" sand. The "400 foot" sand is hydraulically connected with the alluvium and with the "600 foot" sand in some areas of the parish (Ref. 29, pp. 22-23).

"600 foot" Sand

The "600 foot" sand, which underlies both East and West Baton Rouge Parishes, consists of several individual but hydraulically connected sand strata. Because of the stratified nature of the individual sand beds, this aquifer can best be delineated as an interval containing a number of sands. The thickness of the "600 foot" sand ranges from 25 feet to more than 200 feet. The sands are predominantly of medium grain size, but have an average of 25 percent fine sand. In some areas the "600 foot" sand is connected with the overlying "400 foot" sand and the underlying "800 foot" sands (Ref. 29, pp. 26-27).

"800 foot" Sand

The "800 foot" sand underlies much of East and West Baton Rouge Parishes and includes within it sand strata that are irregular in thickness and areal extent. The maximum thickness of the freshwater bearing section of the strata ranges from 80 to 150 feet. The grain size of the "800 foot" sand ranges from fine to medium. An average of 70 percent of the sand is medium grained (Ref. 29, p. 29).

"1,000 foot" Sand

Geologic data states that the "1,000 foot" sand, which is a separate hydrologic unit in the Baton Rouge area, coalesces with the "1,200 foot" sand to the north and east of Baton Rouge. The "1,000 foot" sand is less than 40 feet thick near north Baton Rouge, but northward it thickens to 80 feet before connecting with the "1,200 foot" sand. The sand is medium to fine grained and has a relatively non-uniform distribution of grain size (Ref. 29, p. 32).

"1,200 Foot" Sand

The "1,200 foot" sand is one of the major water-producing aquifers in the Baton Rouge area. Except for the north central part of East Baton Rouge Parish, this sand underlies the entire two parish area. This aquifer has a maximum thickness of 200 feet in the areas north of Baton Rouge and along the western boundaries of West Baton Rouge Parish. This aquifer is about 100 feet thick in the north part of Baton Rouge. The grain sizes in this aquifer range from fine to medium (Ref. 29, p. 35).

"1,500 Foot" Sand

The "1,500 foot" sand underlies East and West Baton Rouge Parishes. Two of three sands separated by clay units normally comprise the "1,500 foot" sand in the north Baton Rouge area; however, the clay beds are not extensive and the sands are hydraulically connected. The aquifer has a maximum thickness of 300 feet in the eastern part of East Baton Rouge Parish and the average thickness is 100 feet. This sand is primarily of medium grain size (Ref. 29, pp. 38-39). One City of Baton Rouge and one Parish Water Company well are screened in the "1,500 foot" sand (Ref. 26; Ref. 31).

"1,700 Foot" Sand

This aquifer is considered to be of Pliocene Age. It is irregular in occurrence; and in several areas, clay occurs in the same interval. This sand ranges from 120 to 240 feet thick and is primarily a medium grained sand (Ref. 29, pp. 41-42).

"2,000 Foot" Sand

The "2,000 foot" sand is considered the uppermost aquifer of Miocene Age in the Baton Rouge area. This sand underlies most of the Baton Rouge area. In the north Baton Rouge area and immediately northwest, the aquifer is divided by local clay lenses into three separate sand units; generally, however the "2,000 foot" sand occurs as a single unit broken only by a few clay lenses. The thickness of this aquifer normally is 150 feet or more. The "2,000 foot" sand has no direct hydrologic connection with the overlying "1,700 foot" sand. The "2,000 foot" sand is generally of medium grain size (Ref. 29, pp. 44-45). One City of Baton Rouge and one Parish Water Company well are screened in the "2,000 foot" sand (Ref. 26; Ref. 31).

"2,400 Foot" Sand

The "2,400 foot" sand underlies most of the Baton Rouge area. The thickness of this aquifer ranges from 80 feet in northwestern East Baton Rouge Parish to 250 feet in northeastern East Baton Rouge Parish. This aquifer is connected with the "2,800 foot" sand. The "2,400 foot" sand is fine to medium grained, containing lenses of coarse sand (Ref. 29, p. 48). The four City of Baker wells and one Parish Water Company well are screened in the "2,400 foot" sand (Ref. 24; Ref. 26). A fourth City of Baton Rouge well is screened in the "2,800 foot" sand (Ref. 31).

In summary, ground water in the Baton Rouge area is found in the alluvial sands, shallow pleistocene deposits, "400 foot" sand, "600 foot" sand, "800 foot" sand, "1,200 foot" sand, "1,500 foot" sand, "1,700 foot" sand, "2,000 foot" sand and "2,400 foot" sand. Public supply wells have been identified within 4 miles of the site which draw from the "1,200 foot", "1,500 foot", "2,000 foot" and "2,400 foot" sands. A very old reference states that numerous industrial wells are screened in each of these aquifers approximately 3.5 miles south of the site (Ref. 29, pp. 16-42). This reference also states that stock, irrigation and domestic wells are screened in the alluvial sands, shallow pleistocene deposits, "400 foot" and "600 foot" sands (Ref. 29, pp. 16, 21, 26).

The annual net precipitation for the region is 20.12 inches (Ref. 11). Because the contaminants detected in the sediment of Devil's Swamp Lake (HCB, HCBD and PCB) are not highly mobile

and because of the relatively low concentrations in the lake, a release into ground water from the lake sediments is not suspected.

3.1.2 Ground Water Receptors

Public drinking water supplies in the area are provided from ground water wells (Ref. 24; Ref. 25; Ref. 26; Ref. 27). The nearest public drinking supply well is the Parish Water Company well located on Scenic Highway at Old Rafe Meyer Road (Ref. 26).

The City of Baker, located 3 miles east of the site, has four wells located within the city limits. One of the wells is located within the 3-4 mile radius of the site (Ref. 1). The City of Baker serves a population of approximately 12,000. The wells are screened at approximately 2,300 feet below ground surface and are used equally in a blended system to supply service throughout the City of Baker (Ref. 24). Their service boundaries are primarily the City of Baker city limits, although they do serve some customers outside the city limits (Ref. 24). The population served by one well in the Baker system was calculated at 3,000 as follows: 12,000 persons served, divided by four wells equally, equals 3,000 persons per well. One of the Baker wells is located within the 3-4 mile radius of the site. Thus 3,000 people are the targets for the 3-4 mile radius in the City of Baker system.

The Baton Rouge Water Company has a total of 53 wells located throughout the city (Ref. 27). Water is mixed in the lines and pump stations from wells throughout the city. Four of the wells are located within the 3-4 mile radius of the site (Ref. 1; Ref. 25). Three of these are located at the Robin Street Pump Station and the fourth is located on Southern University. These wells pump out of the 1,500, 2,000 and 2,800 foot sands. Each of these wells has a capacity of 1,000 gallons per minute (Ref. 27). The remainder of the cities wells are located outside the 4 mile radius of the site (Ref. 27). The Baton Rouge Water Company serves approximately 85,000 connections in their service boundaries within the city limits (Ref. 25). The Baton Rouge Water Company also sells water to the Parish Water Company. The population of Baton Rouge is approximately 219,531 (Ref. 28). Each well serves one 53rd of the population of Baton Rouge. Therefore, 219,531 divided by 53 equals 4,142 persons for each well in the Baton Rouge system. One of the wells is located within the 2-3 mile radius, thus 4,142 persons are the target in this radius for the Baton Route system. Three wells are located within the 3-4 mile radius, thus 3 times 4,142 persons or 12,426 persons are the targets in this radius for the Baton Rouge system.

The City of Alsen Heights, surrounding rural areas and the Baton Rouge Zoo are served by the Parish Water Supply Company, which operates one well within the 1-2 mile radius, one well within the 2-3 mile radius and one well within the 3-4 mile radius of the site (Ref. 1; Ref. 26). These wells are screened at approximately 1,300, 2,000 and 2,400 feet. The Parish Water Company mixes its water roughly equally from its 21 wells. They serve a total of 22,100 connections (Ref. 26); with a 1980 census population estimate of 2.84 persons per household, an estimated population served is 62,764 (Ref. 33, p. 30). This population is served by 21 wells. thus each well serves an estimated one 21st of the 62,764 people or 2,988 persons served by each well in this system. One well each is located in the 1-2 mile radius, the 2-3 mile radius and the 3-4 mile radius. Thus each of these radii has a target of 2,988 persons in the Parish Water Company system.

The service boundaries of the Parish Water Company in the south are the Baton Rouge city limits; the northern boundary is Springfield Road (Ref. 26). The service boundaries of the Parish Water

Company include all of the 4-mile radii of the site, except for those areas within the city limits of Baton Rouge or Baker. The Parish Water Company also buys water from the City of Baton Rouge.

Since the public supply wells in the area are all used in blended systems and each well contributes approximately equally to each system, no public supply well supplies more than 40 percent of the respective systems water supply needs.

Since the priority of the Louisiana Wellhead Protection Program is on shallow wells, the program is not in effect in the Baton Rouge area, where all the municipal wells are relatively deep (Ref. 35).

The distribution of the population using ground water in the target distance area can be found in Table 1.

3.2 SURFACE WATER PATHWAY

3.2.1 Surface Water Characteristics

Devil's Swamp Lake is located approximately 1/4 mile to the northwest of the Baton Rouge Harbor Canal, which is directly connected to and located within 2 miles of the main body of the Mississippi River (Ref. 1). The lake, though small and man-made, may be considered surface water; therefore, the Probable Point of Entry (PPE) is the lake itself. The lake receives drainage from Baton Rouge Bayou and Devil's Swamp via a system of several channels or sloughs (Ref. 9). Direct drainage patterns from the lake are not known at this time, but topographic features indicate that flow patterns for the entire area of Baton Rouge Bayou, Devil's Swamp, Devil's Swamp Lake and the Mississippi River are closely interconnected (Ref. 1). The direction of flow is with the river, to the southeast. Devil's Swamp is known to flow into Devil's Swamp Lake via sheet flow (Ref. 2, p. 1). The position of the lake relative to the swamp, the bayou and the Baton Rouge Harbor make interconnection and flow to the south very likely.

Soils, out of which Devil's Swamp Lake was excavated, are of the Sharkey-Mhoon-Crevasse Association. This association consists largely of back swamps and depressions on the bottom lands of the Mississippi River. The general pattern consists of gently sloping Crevasse soils along riverbanks, level and depressional Sharkey soils in back swamps and level or nearly level Mhoon soils between the Crevasse and the Sharkey soils. These soils are described as poorly drained to excessively drained, clayey, loamy and sandy soils of the Mississippi River floodplain, which are subject to overflow from the river (Ref. 21, p. 3).

The two year, 24-hour rainfall maximum for the region is 5.5 inches (Ref. 30).

3.2.2 Surface Water Receptors

Because direct drainage patterns from the lake have not been determined, it is assumed that drainage from the lake includes Devil's Swamp, Bayou Baton Rouge and the Mississippi River.

Devil's Swamp Lake may be considered a target since the source is contaminated sediment. The lake may be considered a fishery, which has been posted advising the public against the consumption of aquatic organisms (Ref. 7, p. 1).

TABLE 1

POPULATION UTILIZING GROUND WATER FOR A DRINKING WATER SOURCE

	0 - ¼	¼ - ½	½ - 1	1 - 2	2 - 3	3 - 4
City of Baton Rouge	0	0	0	0	4,142	12,426
Parish Water Company	0	0	0	2,988	2,988	2,988
City of Baker	0	0	0	0	0	3,000
TOTAL	0	0	0	2,988	7,130	18,414

Devil's Swamp Lake is located within Devil's Swamp, which is a wetland of approximately 3,500 acres (Ref. 1). Devil's Swamp is considered an important wetland habitat and is utilized by migratory birds (Ref. 16). Devil's Swamp may also be considered a fishery since it was also posted advising the public not to fish or consume aquatic organisms collected there (Ref. 7, pp.1-2).

Baton Rouge Bayou and the Mississippi River are also potential receptors from the Devil's Swamp Lake. They may be considered fisheries and sensitive environments.

The drainage pathway from the lake is not clearly identified. Drainage is suspected to enter Devil's Swamp and the Mississippi River via overflow, drainage ditches or sheet flow (Ref. 1). After the drainage pathway enters the Mississippi River, the remainder of the 15-mile downstream segment is in the river (Ref. 1). The Mississippi River averages 580,250 cubic feet per second (cfs) at the nearest gauging station, which is located approximately 15 miles upstream near St. Francisville (Ref. 12, p. 141). The site is located adjacent to segment 070020 of the Mississippi River. This segment is designated for primary contact recreation, secondary contact recreation and propagation of fish and wildlife (Ref. 13, p. 777). There are no documented surface water intakes in the Mississippi River within 15 miles downstream of the site (Ref. 32).

The Mississippi River is not used as a drinking water supply in the area, nor are water intakes known within the 15-mile downstream segment (Ref. 14; Ref. 15). Drinking water supplies in Baton Rouge and surrounding communities are derived from ground water (Ref. 14).

Federally endangered or threatened species which may be present in East Baton Rouge Parish are the American Alligator (Alligator mississipiensis), Peregrine Falcon (Falco peregrinus anatum, Falco peregrinus tundrius) and the Bald Eagle (Haliaeetus leucocephalus) (Ref. 20). The Pallid Sturgeon, which may be found in the Mississippi River, and Lilaeopsis carolinensis, a plant which may be found in swamps, ditches and marshes of East Baton Rouge Parish, are candidates for listing as endangered or threatened species (Ref. 18, p. 170; Ref. 19, p. 1).

3.3 GROUND WATER RELEASE TO SURFACE WATER PATHWAY

The ground water release to surface water is not evaluated for sites consisting solely of contaminated sediments.

The existence of the nearby swamp indicates that infiltration of surface water to ground water is very low near the site, therefore, ground water release to surface water will not be a factor. The alluvial deposits are known to pinch out in some parts of the region. They are also in direct contact with the "400 foot" sand (Ref. 29, p. 9). Therefore, ground water release to surface water is possible at least in some parts of the region.

3.4 SOIL EXPOSURE PATHWAY

The source at the site is contaminated sediment which may pose a direct contact threat through swimming or wading.

3.4.1 Resident Threat Receptors

There are no residences located within 200 feet of the site. There is no recreational land use within 1 mile of the site. Land use in the area is limited to industrial activities (Ref. 23).

Endangered or threatened species or candidates for listing as endangered or threatened species which may be present in East Baton Rouge Parish are the American Alligator, Peregrine Falcon, Bald Eagle, and Lilaeopsis caroliensis (Ref. 18, p. 170; Ref. 19, p. 1; Ref. 20).

3.4.2 Nearby Threat Receptors

Devil's Swamp Lake has been posted advising the public not to fish or consume aquatic organisms collected from it. Access to the property from public roads is restricted by a fence and private property signs from the Baton Rouge Port Commission (Ref. 36). There is no evidence to suggest that the lake itself is fenced. The nearest residences are located approximately 1 mile to the east in the community of Alsen (Ref. 1). The GEMS database reported there are 32 homes within 1 mile of the site; however, there were no residences located within a 1-mile radius of the site during the off-site reconnaissance inspection (Ref. 1).

3.5 AIR PATHWAY

3.5.1 Air Pathway Characteristics

Sampling of the site has been limited to fish, sediment and water samples. Suspected contaminants are PCBs, hexachlorobenzene (HCB) and hexachlorobutadiene (HCBD), which are in low concentrations. Although HCB and HCBD are possible air contaminants, these substances are not expected to be a threat to the air migration route for several reasons. Their low concentrations in Devil's Swamp Lake make an air release unlikely. Evidence suggests that these contaminants have migrated via sheet flow and drainage ditches to Devil's Swamp Lake. Evaporation of these substances is more likely to have occurred prior to their reaching Devil's Swamp Lake. During investigations of Devil's Swamp, the EPA FIT was unable to document an air release of these substances although they were present in the swamp soils, despite disturbance of the soil during sampling activities (Ref. 38). Finally, these contaminants were detected in sediments and aquatic organisms of the lake, which are submerged under approximately 12 feet of water and therefore are not likely to be available to the air pathway.

3.5.2 Air Receptors

The nearest receptors are workers in the industrial areas, at such active facilities as the Baton Rouge Port Commission area, Rollins Environmental and the Paxon facility, located within 1 mile of the site. There is one school located within 4 miles of the site (Ref. 1). There were no residences located during the off-site reconnaissance within a 1-mile radius of the site; however, GEMS database reports 32 homes within the 1-mile radius of the site (Ref. 1; Ref. 34). The GEMS database report indicated a population of 20,701 within a 4-mile radius of the site (Ref. 34).

Devil's Swamp, comprising approximately 3,500 acres (Ref. 1), is considered an important wetland habitat which is utilized by migratory birds (Ref. 16). Endangered or threatened species

or candidates for listing as endangered or threatened species which may be present in East Baton Rouge Parish are the American Alligator, Peregrine Falcon, Bald Eagle, Pallid Sturgeon and Lilaeopsis caroliensis (Ref. 18, p. 170; Ref. 19, p. 1; Ref. 20).

Since the area is heavily industrialized, there are no commercial agriculture, silviculture or recreational areas within 1/2 mile of the site (Ref. 1, Ref. 36).

4.0 SUMMARY

Devil's Swamp Lake is a man-made lake excavated from Devil's Swamp in 1973. It is located near the Baton Rouge Harbor Canal which connects with the Mississippi River. The lake is located in a heavily industrialized area.

The Brookline section of the Petro Processors, Inc. NPL site is located approximately 1.5 miles upgradient to the northwest and the Scenic Highway section of this NPL site is located approximately 2 miles to the north of Devil's Swamp Lake. The Devil's Swamp Site is located approximately 1 mile to the northwest.

The lake is also subject to storm-water runoff from Agway Industries, Baton Rouge Port Commission property, Allied Chemical Corporation and Rollins Environmental. Wastewater is discharged from NPDES Outfall 001 of the Rollins Environmental Services facility, and flows in a generally west to southwesterly direction via an intermittent tributary of Devil's Swamp Lake.

Analyses of sediment and fish tissue samples collected from the lake, tributary sloughs and bayous have identified the wastestreams from PPI and the Rollins facility in Devil's Swamp and Devil's Swamp Lake. Contaminants which have been identified at the PPI site, Devil's Swamp and Devil's Swamp Lake are hexachlorobenzene and hexachlorobutadiene. Devil's Swamp Lake is subject to sheet flow from Baton Rouge Bayou and Devil's Swamp which may account for migration of contaminants from PPI. PCBs have been identified in a drainage ditch which receives an NPDES discharge from Rollins and empties into Devil's Swamp Lake. Analyses of samples collected from other ditches which empty into the lake have not shown PCB contamination. Devil's Swamp Lake has been posted advising the public not to fish or consume aquatic organisms collected from it.

Surface water is not used as a drinking water supply in the area and no surface water intakes are documented within 15 miles downstream of the site. Local drinking water supplies are supplied from ground water. Eight public supply wells screened in the "1,500 foot", "2,000 foot", "2,400 foot" and "2,800 foot" sand are located within 4 miles of the site. These wells serve an estimated percentage of the populations of Baton Rouge, Baker and rural areas of 16,478 people.

Data gaps at this stage include: specific drainage pathways into and out of the lake and interconnections between the swamp, bayou, river and lake; domestic and irrigation well locations within 4 miles of the site especially in the alluvial aquifer; overflow containment structures around the lake; and specific geology underlying the site.

PA DOCUMENTATION LOG SHEET

SITE:	DEVIL'S SWAMP LAKE
IDENTIFICATION NUMBER:	LAD985202464
CITY:	BATON ROUGE
STATE:	LOUISIANA

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
1	U.S.G.S. 7.5-Minute Series Topographic Maps of Louisiana. Scotlandville, Louisiana, 1963. Photorevised 1980. Walls, Louisiana, 1963. Photorevised 1980. Baton Rouge West, Louisiana, 1963. Photorevised 1980. Lobdell, Louisiana, 1963. Photorevised 1980.
2	Memorandum: Rollins Environmental Services, Inc. Devil's Swamp Lake. From: Michael H. Schurtz, Louisiana Department of Environmental Quality. To: Patricia L. Norton, Secretary; J. Dale Givens, Assistant Secretary, Louisiana Department of Environmental Quality. July 18, 1986. LAD985202464.
3	Memorandum: Devil's Swamp Lake. From: Michael H. Schurtz, Louisiana Department of Environmental Quality. To: J. Dale Givens, Assistant Secretary, Louisiana Department of Environmental Quality. March 13, 1987. LAD985202464.
4	Memorandum: Update on chemical contamination in Fishes, Devil's Swamp Lake. From: Michael H. Schurtz, Louisiana Department of Environmental Quality. To: J. Dale Givens, Assistant Secretary, Louisiana Department of Environmental Quality. June 19, 1987. LAD985202464.
5	Memorandum: Health Hazards at Devil's Swamp Lake. From: Sandra L. Robinson, MD, MPH, Secretary and State Health Officer, State of Louisiana Department of Health and Human Resources. To: Martha Madden, Secretary, Louisiana Department of Environmental Quality. June 22, 1987. LAD985202464.
6	Memorandum: Fish Consumption Advisory - Devil's Swamp Lake. From: Michael H. Schurtz. Louisiana Department of Environmental Quality. To: J. Dale Givens, Assistant Secretary, Louisiana Department of Environmental Quality. October 16, 1987. LAD985202464.
7	Memorandum: Devil's Swamp Lake, East Baton Rouge Parish. From: Michael H. Schurtz. Louisiana Department of Environmental Quality. To: J. Dale Givens, Assistant Secretary, and Robert P. Hannah, Louisiana Department of Environmental Quality. October 27, 1987. LAD985202464.

8	Letter. Investigation of Devil's Swamp. From: William B. De Ville, Administrator, Inactive and Abandoned Sites Division, Louisiana Department of Environmental Quality. To: Cathy Gilmore, Louisiana State Coordinator, State Program Section, U.S. Environmental Protection Agency. December 8, 1988.
9	Memorandum: Devil's Swamp. From: Kirk Cormier and Stanley Howes, III, Louisiana Department of Environmental Quality. To: J. Dale Givens, Assistant Secretary, Louisiana Department of Environmental Quality. June 23, 1980. LAD985202464.
10	Memorandum: Sampling Inspection at Petro-Processors Off-site (Devil's Swamp). From: K. H. Malone, RPM, Ecology and Environment, Region VI. To: Keith Bradley, U.S. Environmental Protection Agency. September 9, 1985. LAD985202464.
11	Letter. HRS Net Precipitation Values. From: Andrew M. Platt, Group Leader, MITRE Corporation. To: Lucy Sibold, U.S. Environmental Protection Agency. May 26, 1988.
12	U.S. Geological Survey, "Water Resources Data Louisiana, Water Year 1990." Water Data Report LA-90-1.
13	Louisiana Department of Environmental Quality. "Louisiana Water Quality Standards" Office of Water Resources. 1984.
14	Record of Communication. City of Baton Rouge Water Supply. From: Jeffrey E. Patterson, Chemist. ICF Technology, Inc. To: Cathy LeBlanc, Baton Rouge Water Company. May 3, 1989. LAD985202464.
15	Record of Communication. Population served by Surface Water. From: Bernard Cousins, FIT Chemist, Ecology and Environment. To: Ken Naquine, Assistant Superintendent, Baton Rouge Water Company. April 25, 1986. LAD985202464.
16	Letter. Preliminary Natural Resources Survey of the Petro Processors Site. From: Bruce Blanchard, Director, Environmental Project Review, U.S. Department of Interior. To: Gene Lucero, Director, Office of Waste Programs Enforcement, U.S. Environmental Protection Agency. October 18, 1983.
17	Concurrent Resolution. Devil's Swamp Lake et al. From: Representative Holden and Senator Cross, Speaker of the House of Representatives and President of the Senate, State of Louisiana. To: U.S. Department of Environmental Protection. Regular Session 1991.
18	Louisiana Natural Heritage Program, "Plants and Animals of Special Concern in the Louisiana Coastal Zone".

19 Louisiana Natural Heritage Program, Federal Threatened, Endangered and Candidate Plants in Louisiana.

20 Watson, M. B., Louisiana Department of Wildlife and Fisheries, Threatened and Endangered Animals of Louisiana.

21 U.S. Department of Agriculture, Soil Conservation Service, Soil Survey, East Baton Rouge Parish, Louisiana. September 1968.

22 U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. "Preliminary Health Assessment for Petro Processors of Louisiana, Incorporated". December 6, 1990.

23 City of Baton Rouge Planning Commission Maps. Residential Land Use of East Baton Rouge Parish. Recreational Land Use of East Baton Rouge Parish. Industrial Land Use of East Baton Rouge Parish. Public and Semi-Public Land Use of East Baton Rouge Parish.

24 Record of Communication. City of Baker Water Wells. From: Jeffrey E. Patterson, Chemist, ICF Technology Inc. To: Leroy White, Assistant Superintendent, City of Baker Water Utilities. February 11, 1992. LAD985202464.

25 Record of Communication. City of Baton Rouge Water System. From: Jeffrey E. Patterson, Chemist, ICF Technology, Inc. To: Karen Debenedetto, Engineering Department, Baton Rouge Water Company. February 11, 1992. LAD985202464.

26 Record of Communication. Parish Water Company Water Supply. From: Jeffrey E. Patterson, Chemist, ICF Technology, Inc. To: Mr. Mitchell and Ms. Liz Hudson, Parish Water Company. February 11, 1992. LAD985202464.

27 Capital Area Ground Water Conservation Commission. List of Public Supply Water Wells, Baton Rouge Water Company. January - March 1989.

28 Record of Communication. Population of Baton Rouge. From: Jeffrey E. Patterson, Chemist, ICF Technology, Inc. To: Reference Librarian, Reference Department, Baton Rouge Library. February 11, 1992. LAD985202464.

29 Morgan, C. O., Geologist U. S. Geological Survey. Ground Water Conditions in the Baton Rouge Area, 1954-1959. December 1961.

30 Hershfield, David M., Rainfall Frequency Atlas of the United States. U.S. Department of Agriculture, Soil Conservation Service. Technical Paper Number 40. 1961.

31 Record of Communication. City of Baton Rouge Water Supply. From: Jeffrey E. Patterson, Chemist, ICF Technology, Inc. To: Cathy Le Blanc, Baton Rouge Water Department. April 26, 1989. LAD985202464.

32 U. S. Environmental Protection Agency Water Quality Analysis Branch Software Package - SITEHELP, Version Active November 16, 1988. Accessed by: Bart Cannalles, U. S. Environmental Protection Agency. February 18, 1992.

33 U.S. Department of Commerce, Bureau of the Census. Estimates of Households for Counties: July 1, 1985.

34 U.S. Environmental Protection Agency, Geographical Exposure Modeling System (GEMS) Database compiled from U.S. Census Bureau 1980 data, accessed March 18, 1992, by Jeffrey E. Patterson.

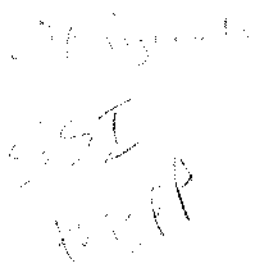
35 Record of Communication. Wellhead Protection Areas. From: Mengistu Lemma, Environmental Scientist. ICF Technology, Inc. To: Mary Gentry, Louisiana Department of Environmental Quality, Groundwater Protection Section. February 27, 1992. LAD985202464.

36 Memo to File. Observations During Off-Site Reconnaissance. From: J.E. Patterson, Chemist, ICF Technology, Inc. To: File. December 11, 1991. LAD985202464.

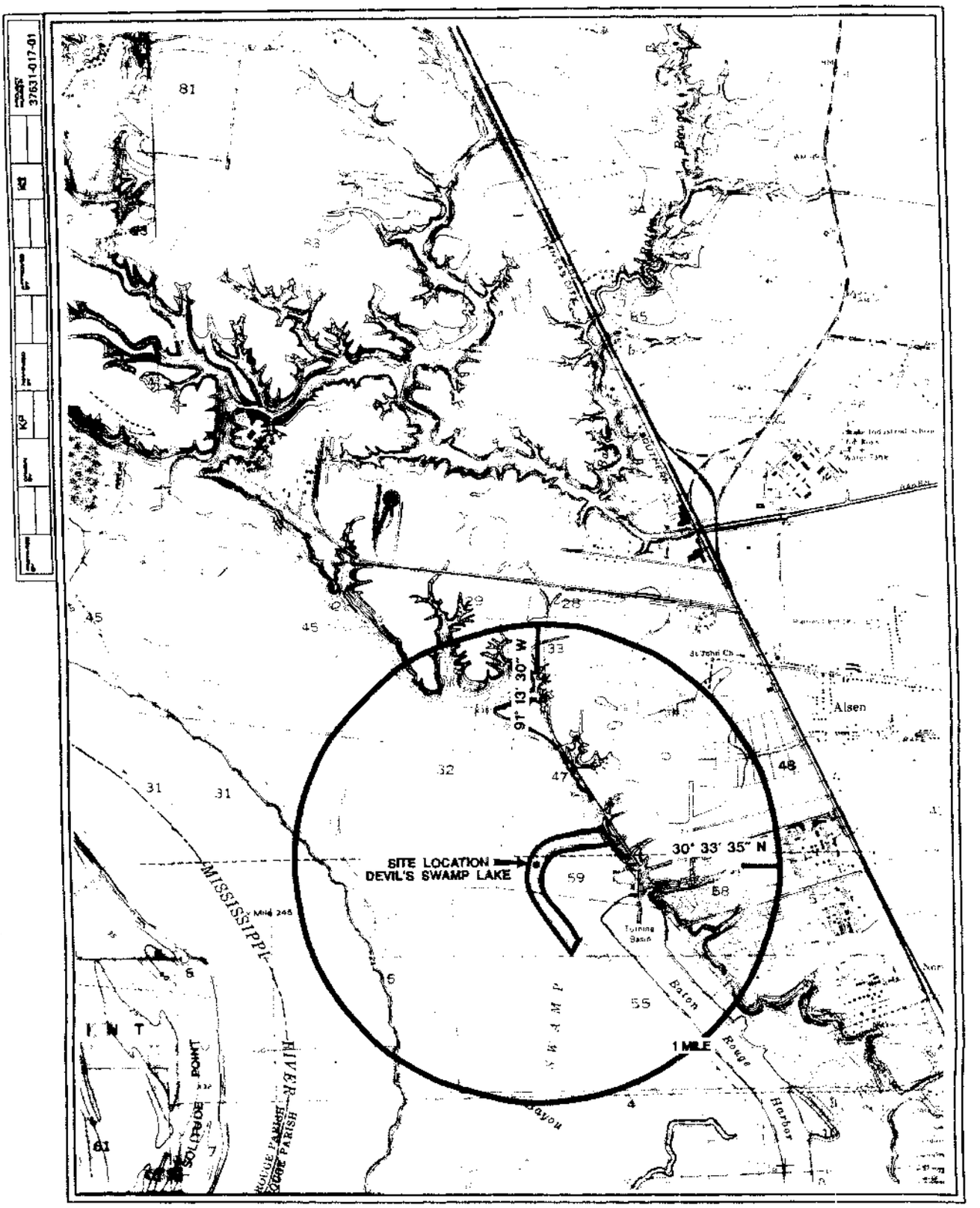
37 Record of Communication. Sources for Bayou Baton Rouge and Devil's Swamp Lake Sites. From: Mengistu Lemma, Environmental Scientist, ICF Technology, Inc. and Jeffrey E. Patterson, Chemist, ICF Technology, Inc. To: Ed Sierra, EPA Superfund Site Assessment Chief and Bart Canellas, EPA HRS Coordinator. February 26, 1992. LAD985202464.

38 Letter. Devil's Swamp HRS. From: Martha M. McKee, Chief, Superfund Site Assessment Section, USEPA. To: Jerry Speir, Sierra Club. September 17, 1986.

REFERENCE 1



ICF TECHNOLOGY INCORPORATED



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SCALE 1 : 24000

FIGURE 1

SITE LOCATION MAP

DEVIL'S SWAMP LAKE
BATON ROUGE,
EAST BATON ROUGE PARISH, LOUISIANA

CERCLIS #LAD985202464

QUADRANGLE LOCATION

WALLS, LA. 1960
SCOTLANDVILLE, LA. 1980

REFERENCE 2

Ref 2 site file

PATRICIA L. NORTON
SECRETARY

OFFICE OF WATER RESOURCES

J. DALE GIVENS
ASSISTANT SECRETARY

July 18, 1986

MEMORANDUM

TO: Patricia L. Norton, Secretary
J. Dale Givens, Assistant Secretary

FROM: Michael H. Schurtz

RE: Rollins Environmental Services (LA), Inc.
Devil's Swamp Lake

A survey of the types and amounts of anthropogenic chemical contamination of sediments in Devil's Swamp Lake was undertaken by the Water Pollution Control Division in August - October, 1985. This survey was undertaken as a follow-up to a similar project conducted during the summer of 1980. The primary objective of these efforts was to monitor any possible deposition and accumulation of potentially toxic chemicals (primarily organics and metals) in the lake sediments as a result of discharges from the Rollins Environmental Services (LA), Inc. facility located north of Baton Rouge on Scenic Highway (U.S. Highway 61).

Wastewater is discharged from this facility via outfall 001 (schematic of Rollins property attached) and flows in a generally west to southwesterly direction, after exiting Rollins property, following the stream bed of an unnamed, intermittent tributary of Devil's Swamp Lake. This lake is a man-made oxbow excavated from Devil's Swamp during 1973 and is surrounded by low-lying bottomlands that grade into cypress swamp in a westerly direction toward the Mississippi River (map attached). The lake is located just to the northwest of the Baton Rouge Harbor Canal. It is subject to sheet flow from Baton Rouge Bayou through Devil's Swamp, discharges and stormwater runoff from the Rollins property, and stormwater runoff from Agway Industries, Baton Rouge Port Commission property and Allied Chemical Corporation (LA0005479) located to the south of the Rollins property. The lake is also subject to seasonal backwater flooding of the Mississippi River.

cc: H. B. F.

Monitoring was accomplished with the collection and analysis of sediment samples from the lake bed and various channels within the limited watershed that drains into the lake. The monitoring strategy entailed the rationale that sediments represent a good "barometer" by which to detect the possible accumulation of environmentally refractory and potentially toxic chemicals. Because of retention time, limited flushing and very low flow-through velocities, sediment deposition of chemical pollutants within a semi-enclosed system such as a small lake is an important consideration in assessing effects of treated wastewater effluents carrying low-level concentrations of refractory contaminants which may be otherwise analytically ephemeral in water.

Laboratory analyses were performed for the U.S. EPA "priority pollutant" organics and metals. Results of the 1980 sediment samples indicated the occurrence of a number of anthropogenic chemicals at levels that could be considered typical for aquatic systems subject to non-point and point source surface and atmospheric inputs from an urban/industrial area. Compounds that were detected included polynuclear aromatic hydrocarbons and chlorobenzenes at low parts per billion (ppb) to threshold parts per million (ppm) levels. These compounds are associated with the combustion of fossil fuels, urban activities and the petrochemical industry. The levels detected did not represent alarming amounts; however, an input of a wide variety of chemicals was indicated and a potential for accumulation was noted. No pesticides or polychlorinated biphenyls (PCBs) were found above detection levels (0.010 ppm) in 1980. It should also be noted that water samples and selected fish samples were analyzed in 1980 and results for these were unremarkable, exhibiting much fewer compounds and very much lower concentrations than the sediments. Data on trace metals were also unremarkable.

Results for the August 26, 1985, sediment samples were quite similar to the 1980 samples in the types and amounts of compounds detected. A significant exception to this general similarity was the detection of PCBs at concentrations of up to 4 ppm in sediments from the northeastern end of Devil's Swamp Lake most proximal to the entrance of the Rollins effluent. PCB concentrations in the sediments declined with distance away from the effluent entry point to 117 ppb (0.117 ppm) at the opposite end of the oxbow. Additionally, PCBs were detected at 4.5 ppm in the Rollins effluent channel sediments at a point approximately midway between the lake and the Rollins property.

These analytical data (which were available in October 1985) were considered significant because of two factors: (1) the occurrence of PCBs in 1985 at the parts per million level, which probably represents concentrations at least 50 times that which could reasonably be considered background levels for aquatic sediments, and (2) the apparent absence of PCBs at quantifiable levels in 1980. "Background" in this context equates to levels that have

resulted primarily from global atmospheric dispersion and deposition through fallout and rainout since the early 1930s when PCBs were first manufactured and used in various industrial applications. The Water Pollution Control Division considers a level of 20 ppb (0.020 ppm) in sediments as an upper limit for background levels. This number does not have regulatory significance, but is based upon a background alert level suggested by the U.S. Geological Survey. It was established statistically to indicate concentrations in the upper 15-20 percent of values from a nationwide ambient sediment network maintained by the Geological Survey.

These 1985 findings provided circumstantial evidence that Rollins Environmental Services (LA), Inc. was the probable source of PCBs in Devil's Swamp Lake. The levels found were not deemed to represent an immediate threat to public health nor are they comparable to levels (>50 ppm) necessary to qualify as "hazardous" under U.S. EPA regulations pursuant to the Toxic Substances Control Act (TSCA) or the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or "Superfund"). However, it was determined that they did represent a potential threat to the aquatic ecosystem of the lake through bioaccumulation. Therefore, further investigation to confirm the 1985 findings and to identify all possible sources was deemed necessary.

As a consequence, additional sampling was undertaken on March 18, 1986, at the same locations that yielded elevated levels in 1985, as well as additional locations within the drainage system on Rollins property and other drainage ditches entering the lake from other industrial facilities in the area. Analytical results of these samples (Table 1) definitely confirm the 1985 findings of low part per million concentrations in sediments of Devil's Swamp Lake. Additionally, results from samples taken in the wastewater effluent ditch on the Rollins property indicate PCB occurrence in sediments as high as 14.2 ppm. Samples from the drainage channels entering the lake from sources other than Rollins, indicate levels that approximate background levels and are several orders of magnitude lower than results from the Rollins drainage system. These findings indicate Rollins to be the source which is contributing to the sediment accumulation of PCBs in the lake system.

Rollins Environmental Services (LA), Inc. discharges under authority of an NPDES permit (LA0038245) issued by the U.S. EPA. This permit limits PCBs in the effluent to a maximum of 35 ppb as a total concentration for dissolved and adsorbed particulate phases. This limit specifies an individual maximum of 5 ppb for each of seven commercial PCB mixtures (Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260). Monitoring is required once per month. A full array of other parameters, including the rest of the 129 priority pollutants, are limited by the permit and regular periodic monitoring is required. This permit was issued in April 1985, and the limitations for PCBs became effective on January 16, 1986. Effluent monitoring data submitted by Rollins for the period October 1980, through January 1985, do not indicate any PCB levels in excess of the method detection level (MDL), which varied from 1-36 ppb over this monitoring period.

In August 1984, a proposed state permit (WP0413) was sent to Rollins. Issuance of the final state permit is currently pending final administrative approval. The current final version requires twice per month monitoring for the priority pollutant PCBs (Aroclor 1016, 1221, 1232, 1242, 1248, 1254 and 1260) with a 5 ppb daily maximum limitation for each Aroclor mixture (total PCB limit is 35 ppb) which tracks the NPDES permit except for the more frequent monitoring requirement in the state permit. These limitations apply to outfall 001.

Currently, the only state permit in place is the Louisiana Stream Control Commission permit revised in 1976. No specific monitoring or effluent limits for PCBs are included in this permit.

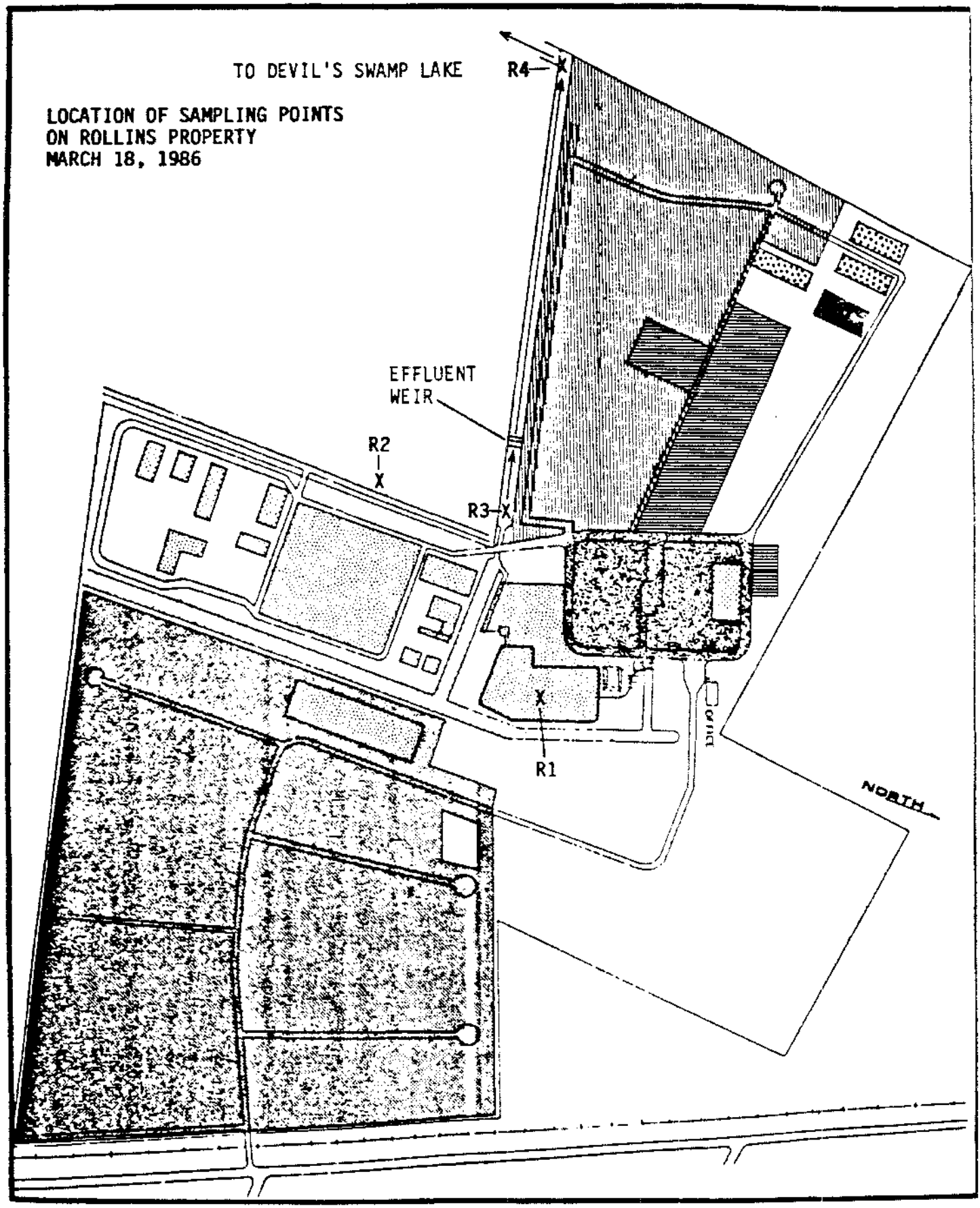
In light of the analytical findings of the August 1985, and March 1986 samples, it is recommended that DEQ reevaluate the proposed final state permit. In particular, the discharge to Devil's Swamp Lake should be reconsidered. The PCB data indicate that the lake is acting as a reservoir or "sink" for these compounds even though their input is possibly low level. Additionally, data for other organics indicate the presence of a wide variety of potentially toxic anthropogenic compounds (see Tables 2 & 3). Data indicate a definite potential for accumulation of certain of these chemicals, although probably not as accelerated as for PCBs.

It is further recommended that a Compliance Order be issued to Rollins Environmental Services (LA), Inc. requiring them to immediately undertake an on-site investigation and sampling effort to determine the source of PCBs within their facility. Although the company is not authorized to dispose of PCB wastes (50 ppm or greater content), it is probable that they have handled industrial wastes otherwise designated that have contained PCBs below the regulatory threshold.

Attached are individual laboratory reports of PCBs for the 1985 and 1986 samples. Additional attachments include the volatile and extractable organics data for the 1985 samples. Fish samples collected in March 1986, to assess possible bioaccumulation, are under analysis by the WPCD Organics Analysis Lab at this time and results should be available later this summer.

MHS:lfh

cc: Louis R.C. Johnson
Bob Hannah
Gary Aydell
Marion Fannaly



Schematic layout of Rollins' facility.

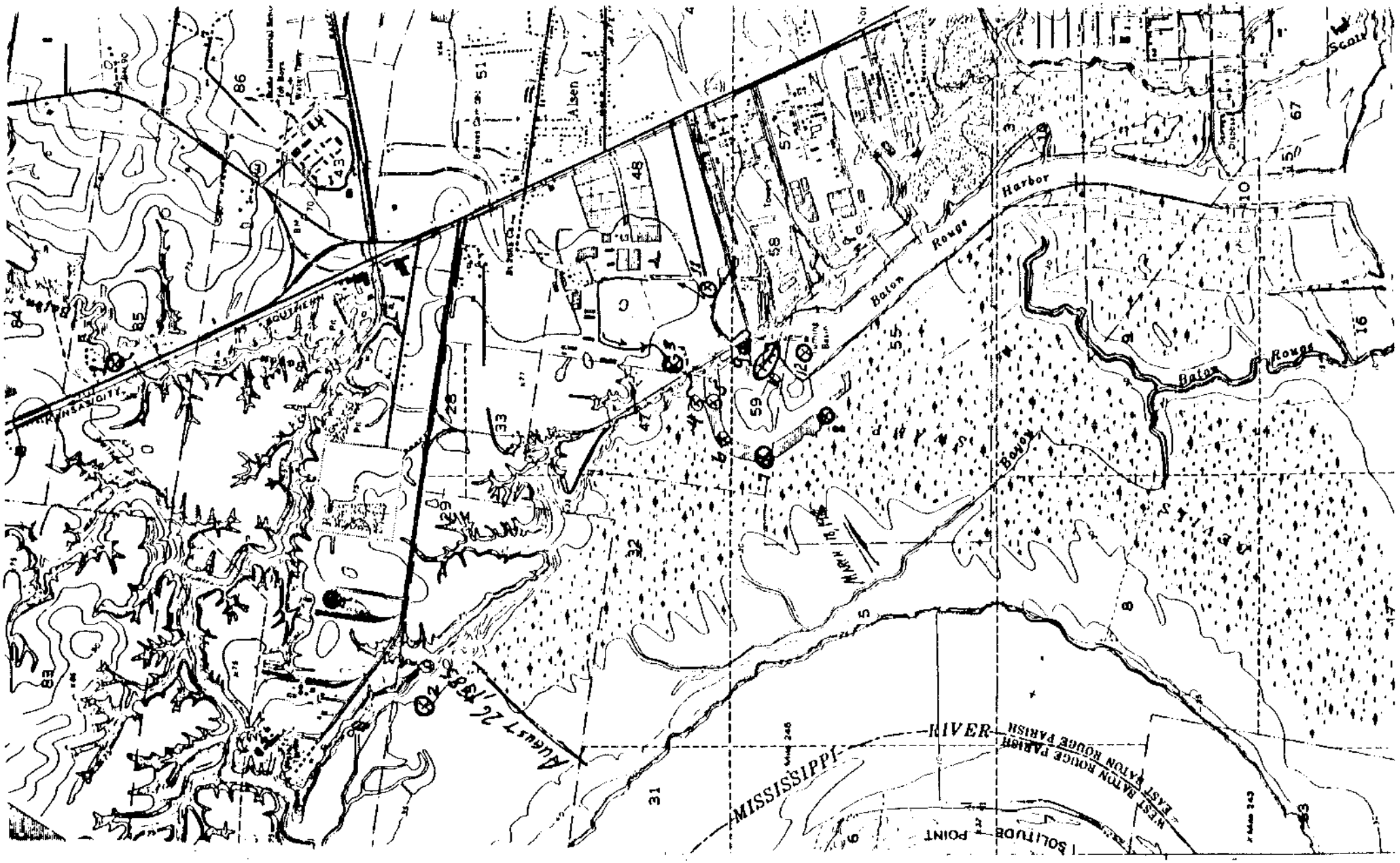

Baton Rouge Harbor
Baton Rouge
Baton Rouge
Bayou
MISSISSIPPI RIVER
WEST BATON ROUGE PARISH
EAST BATON ROUGE PARISH
SOLITUDE POINT
August 24, 1983
Alsen
Scale

Table 1

Parts Per Million (ppm) - dry weight basis - mg/kg

PCB Concentrations in Sediments

Devil's Swamp Lake Drainage System

Location		Sampling Period: March 18, 1986	Sampling Period: August 26, 1985
R1.	Rollins Environmental Services, Inc. Stabilization Pond sediment	Total PCBs - 0.96	Not Collected
R2	Rollins perimeter ditch (outside fence line) west of "aeration basin" and old "Hy-Purle" area	Total PCBs - 0.027	Not Collected
R3	Rollins effluent ditch between "old 002" outfall point and 001 effluent weir	Total PCBs - 14.2	Not Collected
R4	Rollins effluent ditch at 90 degree turn adjacent to "mixing shed"	Total PCBs - 2.21	Not Collected
1	Baton Rouge Bayou - 200 yards upstream of U.S. Hwy. 61 (Scenic Hwy.)	Not Collected	0.012
2	Baton Rouge Bayou - 200 yards downstream from Petro Processors site	Not Collected	0.19
3	Rollins effluent ditch approximately 100 feet upstream of railroad (above culverts)	Total PCBs - 2.18	4.54
3A	Rollins effluent ditch at "pool" immediately above railroad track (below culverts)	Total PCBs - 3.0	Not Collected
3B	Railroad right-of-way ditch immediately NW of Rollins effluent ditch (west side of railroad tracks)	Total PCBs - 0.0055	Not Collected
3C	Railroad right-of-way ditch immediately SE of Rollins effluent ditch (west side of railroad tracks)	Total PCBs - 0.0034	Not Collected
4	Rollins effluent ditch below railroad at "delta" entering Devil's Swamp Lake	Total PCBs - 2.31	4.11
5	Devil's Swamp Lake - mid-lake directly opposite effluent delta	Total PCBs - 3.1	1.39
6	Devil's Swamp Lake - mid-lake adjacent to up gradient reach of "swamp embayment"	Total PCBs - 0.24	1.19
7	Devil's Swamp Lake - mid-lake adjacent to down gradient reach of "swamp embayment"	Total PCBs - 0.12	0.44
8	Devil's Swamp Lake - mid-lake at SE reach of oxbow	Total PCBs - 0.11	0.117
9	Culvert on west side of Agway parking lot	Total PCBs - 0.0039	Not Collected
10	Composite sample (5 cores) from swamp area below "landfill" on south-southwest side of Agway property	Total PCBs - 0.188	Not Collected
11	Right-of-way drainage ditch along north-side of "Port Commission access road" at Rollins fence line	Total PCBs - 0.046	Not Collected
12	Baton Rouge Harbor Canal at turning basin	Total PCBs - 0.077	Not Collected

Table 3

Devil's Swamp Lake Survey - Sediments

Priority Pollutants (ppb) Extractable Organics (dry weight basis)

	1985 Station #								1980 Lake Stations	
	1	2	3	4	5	6	7	8	Ranges	# of Stations
Phenol	93	140			66			140	3800-15100	(5)
4-chloro-3-methyl phenol		110			130	41				
2,4,6-trichlorophenol					66					
4-nitrophenol		2200			950					
2-methyl-4,6-dinitrophenol		1200			1500	650				
Pentachlorophenol		710			600					
1,3-dichlorobenzene*		970				67		430	50 - 1400	(3)
1,4-dichlorobenzene*		380					2800	400		
1,2-dichlorobenzene*								270	650	(1)
1,2,4-trichlorobenzene		320	33				2500	140	410	(1)
Hexachlorobenzene		>10000	180			200			90 - 140	(2)
Hexachlorobutadiene		>15000							<10	(2)
Dimethyl phthalate	2000									
Diethyl phthalate	200	330	930	2200	450	330				
Di-n-butyl phthalate	790	830			130	1500	2000			
Butylbenzyl phthalate					110					
Bis(2-ethylhexyl)phthalate	4600	>7100		590	230	490	1200	2900		
Naphthalene		160		170	160	460		450	2200	(1)
Acenaphthalene		140	500	290	140	270			10 - 760	(5)
Acenaphthene	200	590	78	22			3600	220	20 - 1500	(5)
Fluorene	250	940	120					290	150 - 920	(3)
Phenanthrene	840	5000	180	120	57	91		190	30 - 1700	(5)
Anthracene	3300	1600	280	270	65	200				
Fluoranthrene	220	4200	170	150	57	110		58		
Pyrene	1200	4800	470	310	150	380	3300	58	50 - 970	(5)
Benzo(a)anthracene	120	2300	120	100	39	110		700		
Chrysene	200	2400	120	150	69	140		700	20 - 1200	(4)
Benzo(b)fluoranthrene		2500							30 - 560	(4)
Benzo(k)fluoranthrene		2000								
Benzo(a)pyrene		2800							100 - 1100	(4)
N-nitrosodiphenylamine			120	59		87			30 - 510	(3)
N-nitroso-di-n-propylamine							2100			

Remarks: Station 2 - influenced by Petro Processors site
Station 3 - Rollins ditch
Stations 4 - 8 - influenced by Rollins

Table 2

Devil's Swamp Lake Survey - Sediments

Priority Pollutants (ppb) Volatile Organics (VOC)

1985 Station #

	1	2	3	4	5	6	7	8	1980 Lake Stations Ranges	# of Stations
Vinyl chloride		4								
Dichloromethane										
1,1-dichloroethane		<1								
t-1,2-dichloroethene		2								
1,2-dichloroethane (EDC)	<1	6								
1,2-dichloropropane	<1	<1								
Trichloroethene		2								
1,1,2-trichloroethane		<1								
Toluene	3			900	110			5	40 - 940	(3)
Chlorobenzene		<1	<1		<1	<1	<1	7	10 - 190	(2)
Ethylbenzene								23	4200	(1)
1,3-dichlorobenzene*		56	1	<1	<1		3	7		
Dichlorobenzenes (1,2 & 1,4)*		6	<1	<1	<1	2	<1	2		
Chloroethane								13		
Chloroform								<1		

Remarks: Station 2 - influenced by Petro Processors site
Station 3 - Rollins ditch
Station 4 - 8 - influenced by Rollins

* See extractable organics

REFERENCE 3

Organics Analysis Laboratory has submitted analytical results for PCBs in fish tissue. These data are summarized in the table attached (original lab analytical reports are also attached). The results are based on gas chromatography (GC) with electron capture detection. The

Ref 3

Martha A. Madden
SECRETARY

OFFICE OF WATER RESOURCES

J. DALE GIVENS
ASSISTANT SECRETARY

March 13, 1987

To: J. Dale Givens

From: Michael H. Schurtz

Subject: Devils Swamp Lake

Pursuant to our continuing assessment of the occurrence of polychlorinated biphenyls (PCBs) in Devils Swamp Lake, the WPCD Organics Analysis Laboratory has submitted analytical results for PCBs in fish tissue. These data are summarized in the table attached (original lab analytical reports are also attached). The results are based on gas chromatography (GC) with electron capture detection. The lab is undertaking further analyses using gas chromatography/mass spectrometry (GC/MS) to confirm the GC identifications. The results here reported should be considered preliminary until such time as GC/MS confirmation is made. Re-extraction of these samples and extraction of additional specimens by our lab for GC/MS analysis has been made a priority for completion.

However, because the levels indicated by these preliminary results approach the U.S. Food and Drug Administration "action level" for PCBs in edible portions of fish and other seafood (5.0 ppm), it is my recommendation that this information be provided to the Department of Health and Human Resources (DHHR) for their review. Additionally, I suggest that the DHHR Bureau of Laboratories analyze aliquots of edible portions retained by our lab of the samples herein reported, as well as additional specimens of various species, for the purpose of interlaboratory confirmation. Our staff will coordinate transport of this sample material to the DHHR labs as necessary.

For your review, I have attached my earlier report (7/18/86) which details the background and earlier findings of this investigation of

PCBs and other anthropogenic chemicals in Devils Swamp Lake. Because relatively high levels of PCBs have now been documented in fish tissue, as well as earlier in lake sediments, I emphasize my earlier recommendations concerning the proposed state permit for Rollins Environmental Services (LA), Inc. and, particularly, the location of this company's currently permitted discharge.

MHS:pc

attachments

cc: Marion Fannaly
Gary Aydell
Louis Johnson
Frank Thomas
Yau Hong Lui

SUSPECT DATA 1HHS 6/19/87

ANALYTICAL RESULTS - DEVILS SWAMP LAKE - FISH TISSUE RESIDUES

CONCENTRATIONS EXPRESSED AS PARTS PER MILLION (PPM) - MICROGRAMS/GRAM WET WEIGHT

SPECIES	WEIGHT*	ST*	TL*	AROCLOR 1016	AROCLOR 1254	AROCLOR 1260	TOTAL PCBs	PORTION
176-860730-01A LARGE MOUTH BASS	3.75	14.75	16.75	0.241	0.049	0.028	0.318	EDIBLE
176-860730-02A LARGE MOUTH BASS	2.62	14.50	16.75	5.181	0.419	0.348	5.948	EDIBLE
176-860730-03A LARGE MOUTH BASS	3.38	14.75	17.00	2.395	0.107	0.098	2.600	EDIBLE
176-860730-04A LARGE MOUTH BASS	2.62	13.50	15.50	1.814	0.112	0.067	1.993	EDIBLE
176-860730-05A LARGE MOUTH BASS	1.44	11.00	12.75	0.859	0.050	0.060	0.969	WHOLE BODY
176-860730-06A LARGE MOUTH BASS	2.06	13.00	15.25	0.238	0.043	0.042	0.323	WHOLE BODY
176-860730-16A BIG MOUTH BUFFALO	0.94	9.25	11.00	0.422	0.085	ND**	0.507	WHOLE BODY
176-860730-20A WHITE BASS	0.62	9.00	10.75	2.137	0.215	0.187	2.539	WHOLE BODY

* WEIGHT (POUNDS) - STANDARD LENGTH & TOTAL LENGTH (INCHES)

** NOT DETECTED

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: Largemouth Bass (#176-860730-01A)

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Alpha BHC	0.1
Heptachlor	2.9
Delta BHC	1.4
Aldrin	5.7
Heptachlor epoxide	8.6
Trans chlordane	177.3
p.p. DDE	8.4
o.p. DDT	18.4
p.p. DDT	8.0
Mirex	2.5
Methoxychlor	23.5
Methyl parathion	2.6
Dieldrin	0.1
Photodieldrin	1.2
Aroclor 1016	241.0
Aroclor 1254	48.6
Aroclor 1260	28.0

SUSPECT DATA
TLKS 6/19/87

*Edible portions

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: Largemouth Bass (#176-860730-02A)

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Alpha BHC	2.8
Heptachlor	40.0
Delta BHC	3.5
Aldrin	57.1
Heptachlor epoxide	78.0
Trans chlordane	221.0
p.p. DDE	101.7
o.p. DDT	200.5
p.p. DDT	109.0
Mirex	30.0
Methoxychlor	23.5
Ethyl parathion	10.0
Endrin	49.0
Endrin ketone	167.1
Aroclor 1016	5181.0
Aroclor 1254	419.0
Aroclor 1260	348.3

SUSPECT DATA
MKS 6/19/87

*Edible portions

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: Largemouth Bass (#176-860730-03A)

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Trifluralin	6.8
Alpha BHC	8.1
Delta BHC	26.4
Aldrin	17.0
Heptachlor	81.0
Cis chlordane	187.0
p.p. DDE	7.9
o.p. DDT	106.0
p.p. DDT	24.4
p.p. Methoxychlor	19.0
Methyl parathion	97.0
Endosulfan I	1.3
Dieldrin	12.8
Endrin	14.9
Endrin Ketone	81.1
Aroclor 1016	2395.4
Aroclor 1254	107.4
Aroclor 1260	98.4

SUSPECT DATA
MMS 9/9/87

*Edible portions

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: Largemouth Bass (#176-860730-04A)

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Trifluralin	11.1
Alpha BHC	8.6
Delta BHC	47.0
Aldrin	14.1
Heptachlor epoxide	66.8
Cis chlordane	155.4
p.p. DDE	17.0
o.p. DDT	117.9
Methyl parathion	15.9
Ethyl parathion	5.6
Endosulfan I	0.2
Dieldrin	0.5
Endrin	21.0
Endrin Ketone	57.1
Aroclor 1016	1814.0
Aroclor 1254	111.8
Aroclor 1260	66.8

SUSPECT DATA
JHKS 6/9/15

*Edible portions

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: 176-860730-05A Analyzed By: F. Thomas

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Alpha BHC	0.88
Heptachlor	9.88
Delta BHC	1.13
Aldrin	14.25
Heptachlor epoxide	18.63
Trans chlordane	51.30
p.p'. DDE	16.63
o.p'. DDT	43.63
p.p'. DDT	18.80
Mirex	6.13
Methoxychlor	55.0
Methyl parathion	33.0
Aroclor 1016	859.3
Aroclor 1254	49.88
Aroclor 1260	60.13

*Whole body

Suspect DATA
6/19/86

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: 176-860730-06A Analyzed By: F. Thomas G.T.

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Alpha BHC	0.25
Heptachlor	4.25
Delta BHC	1.0
Aldrin	11.38
Heptachlor epoxide	17.80
Trans chlordane	30.63
p.p'. DDE	11.75
o.p'. DDT	35.0
p.p'. DDT	63.5
Mirex	0.75
Aroclor 1016	238.31
Aroclor 1254	43.44
Aroclor 1260	42.30

SUSPECT DATA
MHS 6/19/87

*Whole body

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: 176-860730-16A Analyzed By: F. Thomas F.T.

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Heptachlor	10.13
Delta BHC	3.5
Aldrin	25.25
Heptachlor epoxide	42.88
Trans chlordane	69.63
p.p'. DDE	3.13
o.p'. DDT	65.25
Mirex	9.88
Methoxychlor	85.0
Methyl parathion	1.88
Aroclor 1016	422.5
Aroclor 1254	85.3

*Whole body

Suspect DATA

6/19/87

PESTICIDE/CHLORINATED HYDROCARBON ANALYSIS REPORT

Sample: 176-860730-20A Analyzed By: F. Thomas F.T.

Collected By: J. Dixon, R. Albritton, H. Leggett

Date Collected: 7/30/86

Date Submitted: 7/31/86

Location: Devil's Swamp Lake

COMPOUNDS IDENTIFIED	RESULTS (ng/g)
Alpha BHC	2.0
Heptachlor	31.5
Delta BHC	6.63
Aldrin	49.75
Heptachlor epoxide	34.63
Trans chlordane	89.63
p.p'. DDE	4.38
o.p'. DDT	154.0
p.p'. DDT	72.0
Mirex	22.5
Methoxychlor	193.75
Endrin	2.13
Aroclor 1016	2137.13
Aroclor 1254	215.3
Aroclor 1260	187.38

Suspect Data
6/9/87

*Whole body

REFERENCE 4

MARTHA A. MADDEN
SECRETARY

OFFICE OF WATER RESOURCES

J. DALE GIVENS
ASSISTANT SECRETARY

June 19, 1987

To: J. Dale Givens

From: Michael H. Schurtz

Subject: Update on chemical contamination in Fishes, Devils Swamp Lake

Reference here is made to my memo of March 13, 1987 (copy attached) concerning preliminary results on PCB concentrations in fishes from Devils Swamp. Analytical results have been received from both the DHHR Laboratory and our Water Pollution Control Division laboratory as followup to these earlier preliminary results. These followup results include re-analysis of samples reported earlier (in March) as well as analysis of samples not previously analyzed. Attached is a tabulation of both the DHHR data and data for two samples analyzed by our lab using GC/MS.

These followup results indicate that data submitted in March (which reported PCB levels in edible fish tissue approaching or in excess of the U.S. FDA Action Level of 2.0 ppm) are suspect. These more recent confirmatory results indicate PCBs levels to be below 1.0 ppm in the range of 0.1 to 0.6 ppm, depending upon species and specimen size. However, these followup analyses additionally confirm the presence of hexachlorobenzene (HCB) and hexachloro-1,3-butadiene (HCBD). These chemicals were suspected earlier but were not found in the preliminary analyses reported in March.

My interpretation of these data is that the preliminary results on PCBs reported in March are not valid and should not be considered as representative of the fish tissue contamination. Therefore, my assessment is that at this time the PCB levels in fish from Devils Swamp, although of concern, do not represent a situation as potentially serious as the recent Capitol Lake situation where PCBs were documented at levels approximately an order of magnitude higher. However, these followup analyses indicate levels of HCB and HCBD that do exceed the "emergency guidelines" recently utilized by DHHR and DEQ in assessing the seafood contamination in certain areas of the Calcasieu estuary. The guidelines are 0.060 ppm for HCB and 0.060 ppm for HCBD, both applicable only to edible tissues.

I have been advised by Dr. Joyce Mathison, State Epidemiologist for DHHR, that she is preparing a recommendation for the issuance of a fishing and consumption advisory on Devils Swamp Lake. If DEQ is requested by DHHR to post advisory signs at access points to the lake, it will be necessary for our Legal Division to contact the landowners for permission to undertake such a posting since the Devils Swamp Lake is privately owned.

It is my opinion, based upon our 1985 and 1986 investigations in the Devils Swamp watershed, that the source of HCB and HCBD contamination is the "Petro Processors" site located on the northern end of Devils Swamp itself. Analyses of soil and sediment from drainage tributaries from other potential sources have not indicated contribution of HCB and HCBD.

MHS:pc

attachments

cc: Bobby Savoie, DHHR

by hexachlorobutadiene and hexachlorobenzene in Devil's Swamp downgradient of the PPI site (Ref. 10, pp.4-5).

In June of 1987 LDHHR recommended to LDEQ that Devil's Swamp Lake be posted against fishing as quickly as possible. They also recommended issuance of an advisory, warning the public against fishing or consuming fish from that area (Ref. 5). The posting of the lake with signs warning against swimming in and the taking and consuming of fish and other aquatic organisms from the lake was completed in October of 1987. A major portion of Devil's Swamp north of Devil's Swamp Lake and surrounding the Petro Processors Inc. site had previously been posted by LDEQ advising the public of the chemical contamination in the swamp (Ref. 7, pp.1-2).

2.4 REGULATORY STATUS/ ACTIVITIES

Several regulatory investigations have occurred at Petro Processors Inc., Devil's Swamp (also known as The Ewell Property) and Devil's Swamp Lake. In 1980 the Water Pollution Control Division (WPCD) of LDEQ made an inspection and conducted water quality tests of the lake (Ref. 9). In 1986 and 1987 the Office of Water Resources (OWR) of LDEQ collected samples of sediment and fish tissue samples in the lake and its tributaries (Ref.2; Ref. 3; Ref. 4; Ref. 7). The results of these investigations were that LDEQ personnel believed that PCB contamination in the sediments and fish of Devil's Swamp Lake is due to the Rollins facility and HCB and HCBD contamination is due to migration from the PPI site via Devil's Swamp and Baton Rouge Bayou.

MKS 6/19/87

FISH TISSUE ANALYSES - DEVILS SWAMP LAKE

CONCENTRATIONS EXPRESSED AS PARTS PER MILLION (PPM)-MICROGRAMS/GRAM WET WEIGHT

SPECIES/SAMPLE #	WEIGHT (LBS)	STANDARD LENGTH (inches)	TOTAL LENGTH (inches)	TOTAL PCBs	PENTACHLOROBENZENE	HEXACHLOROBENZENE	HEXACHLORO-1,3-BUTADIENE
LARGEMOUTH BASS 176-860730-01A	3.75	14.75	16.75	0.379	0.024	0.073	0.224
LARGEMOUTH BASS 176-860730-02A	2.62	14.50	16.75	0.589	ND	0.028	0.032
LARGEMOUTH BASS 176-860730-03A	3.38	14.75	17.00	0.531	0.031	0.122	0.270
LARGEMOUTH BASS 176-860730-04A	2.62	13.50	15.50	0.298	0.019	0.086	0.158
LARGEMOUTH BASS 176-860730-05A	1.44	11.00	12.75	0.304	0.005	0.041	0.050
LARGEMOUTH BASS 176-860730-06A	2.06	13.00	15.25	0.398	ND	0.030	0.038
LARGEMOUTH BASS 176-860730-07A	1.00	10.00	11.75	0.290	ND	0.029	0.045
LARGEMOUTH BASS 176-860730-08A	0.69	9.00	10.50	0.200	ND	0.024	0.021
CHANNEL CATFISH 176-860730-12A	1.81	15.25	17.00	0.174	ND	0.035	0.014
BIGMOUTH BUFFALO 176-860730-13A	1.56	11.75	13.75	0.292	ND	0.006	0.028
SMALLMOUTH BUFFALO 176-860730-17A	0.56	7.75	9.00	0.117	ND	0.015	0.026
WHITE BASS 176-860730-19A	0.62	9.75	11.50	0.324	ND	0.019	0.011
WHITE CRAPPIE 176-860730-23A	0.69	8.50	10.00	0.300	ND	0.015	0.039
WHITE CRAPPIE 176-860730-29A	0.31	6.50	8.00	0.139	ND	0.010	0.013

DATA from LA DHHR - Gas Chromatography with Electron Capture Detection
ND = Not Detected
All chemical data are for edible portions

LARGEMOUTH BASS 176-860730-01A	3.75	14.75	16.75	0.201	0.016	0.034	0.065
LARGEMOUTH BASS 176-860730-03A	3.38	14.75	17.00	0.324	ND*	0.058	0.062

DATA from LA DEQ - Gas Chromatography/Mass Spectrometry
* Pentachlorobenzene not detected; 0.007 ppm of 1,4-dichlorobenzene and 0.003 ppm of tetrachlorobenzenes were determined
All chemical data are for edible portions

REFERENCE 5

State of Louisiana
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
P O BOX 3776
Baton Rouge, Louisiana 70821

EDWIN W EDWARDS
GOVERNOR

SANDRA L ROBINSON, M D , M P H
SECRETARY
STATE HEALTH OFFICER
504/342-6711

22 June 1987

Martha Madden, Secretary
Louisiana Department of Environmental Quality
P.O. Box 44066
Baton Rouge, LA 70804

RE: HEALTH HAZARDS AT DEVIL'S SWAMP LAKE

Dear Ms. Madden,

On the basis of data shared with us by your Water Pollution Control Division and of fish tissue samples examined in our own laboratory, we find that edible portions of fish caught in Devil's Swamp Lake, in East Baton Rouge Parish, contain such high levels of toxic and carcinogenic chemicals that they must be considered unfit for human consumption.

In order to protect the public from the potential adverse health effects of consuming these fish, we recommend that the Department of Environmental Quality inform the property owner(s) of these findings and post the lake against fishing as quickly as possible. As soon as this can be done, we should probably issue a joint DHHR/DEQ advisory warning the public against fishing in or consuming fish from that area. We will be glad to work with you on appropriate wording for such an advisory.

We would like to express our appreciation for the sharing of information and the cooperative discussion we have had from DEQ staff on this issue of common concern to both our departments.

Sincerely,

Sandra L. Robinson, MD, MPH
SECRETARY AND STATE HEALTH OFFICER

DEPARTMENT OF
ENVIRONMENTAL QUALITY

JUL 02 1987

OFFICE OF THE SECRETARY

REFERENCE 6

Ref 5
Ref 6

Martha A. Madden
SECRETARY

OFFICE OF WATER RESOURCES

J. DALE GIVENS
ASSISTANT SECRETARY

October 16, 1987

To: J. Dale Givens

From: Michael Schurtz

ok

Subject: Fish Consumption Advisory - Devils Swamp Lake

Listed below are landowners of property surrounding and including Devils Swamp Lake. At my request, Ronnie Albritton compiled this list based on review of records at the EBR Clerk of Court and the Tax Assessor's Office and after comparing with information compiled by the Inactive and Abandoned Sites Division. These are the landowners that we propose to contact and advise of our intent to post signs advising the public against the taking and consuming of fishes from Devils Swamp Lake because of possible chemical contamination. Signs must necessarily be placed upon property of these landowners.

I would like to proceed with this activity with the intent of having areas of access and the perimeter of the lake posted by Friday, October 23, 1987. After the posting is completed, an adivsory can be issued through the news media by Secretary Madden's office.

Your authorization to proceed with this activity is requested.

DEVILS SWAMP AREA LANDOWNERS

1)	Mr. Dave Ewell, Jr. Mr. Layton Ewell	(775-0928)
2)	East Baton Rouge Port Commission (Baton Rouge Barge Canal Terminal)	(389-4207)
3)	Rollins Environmental Services (LA), Inc.	(778-1234)
4)	Agway Systems, Inc.	(778-1440)
5)	Kansas City Southern Lines	(379-4200)

MS:pc

REFERENCE 7

MARTHA A. MADDEN
SECRETARY

OFFICE OF WATER RESOURCES

J. DALE GIVENS
ASSISTANT SECRETARY

October 27, 1987

To: J. Dale Givens
Robert P. Hannah

From: Michael H. Schurtz

Subject: Devils Swamp Lake, East Baton Rouge Parish

The Water Pollution Control Division has completed the posting of Devils Swamp Lake with signs advising the public against swimming in, and the taking and consuming of fish and other aquatic organisms from the lake. The posting of this advisory was made pursuant to an assessment of chemical contamination in the lake which was initiated in the fall of 1985 with a sediment screening survey. Results of the screening survey indicated the occurrence of a variety of industrial chemicals including chlorinated hydrocarbons and polynuclear aromatic hydrocarbons in the lake sediments at levels that were considered elevated above background.

Of particular concern was the occurrence of polychlorinated biphenyls (PCBs) in sediments at the low part per million level (less than five ppm). Because of these findings in the sediments, additional monitoring was scheduled in the spring of 1986 which confirmed the earlier observations. Therefore, during the fall of 1986 through the spring of 1987, a series of fish samples from the lake were analyzed for residues of the observed chemicals in edible tissues (fillets). The tissue results indicated levels of PCBs that are not considered a health threat at this time, since they did not exceed the U.S. Food and Drug Administration "Action Level" of 2.000 ppm. The highest PCB level observed was 0.589 ppm. However, the tissue results indicated levels of hexachlorobenzene (HCB) and hexachloro-1,3-butadiene (HCBD) that exceed the guideline recently utilized by DHHR and DEQ in assessing seafood contamination in the Calcasieu estuary. This guideline is 0.060 ppm for either HCB or HCBD, applicable only to edible tissues. The HCB levels ranged up to 0.122 ppm and the HCBD levels ranged to 0.270 ppm.

Earlier assessment of sediments from the Devils Swamp Lake and tributary sloughs and bayous, indicated the sources of the HCB and HCBD to be the "Petro Processors" abandoned hazardous waste site located on the northern end of Devils Swamp. The "Petro Processors" site is currently under a cleanup plan established under a settlement agreement between the U.S. EPA, the State of Louisiana and several of industries identified as having earlier disposed of waste at the site. The major portion of Devils Swamp itself north of Devils Swamp Lake and surrounding the Petro Processors site has previously been posted by the DEQ Inactive and Abandoned Hazardous Waste Sites Division advising the public of the chemical contamination associated with the disposal site.

It is recommended that the Office of the Secretary issue a public advisory through the news media concerning this posting of Devils Swamp Lake.

MHS:pc

REFERENCE 8

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY

BUDDY ROEMER
GOVERNOR

PAUL H. TEMPLET, Ph.D.
SECRETARY

December 8, 1988

Ms. Cathy Gilmore
Louisiana State Coordinator
State Program Section (6H-SS)
U.S. E.P.A. Region VI
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Dear Ms. Gilmore:

The investigation of Devil's Swamp by LDEQ will be institituted in two phases. The first phase will consist of obtaining 164 soil samples from 41 locations by hand auger. Twenty sediment samples will be collected from waterways in the swamps. This first phase will also explore ground water levels as well as the methodologies to be employed in the installation of well points in the second phase.

Four soil samples will be collected from each sample location by hand auger. After the vegetative cover is removed a sample of the soil immediately underneath will be taken . The hand auger will be advanced to a depth of two feet and a grab sample taken. The hand auger will then be advanced to a depth of four feet and another grab sample taken. Finally the hand auger will be advanced to a depth of six feet and a grab sample taken. The samples will be submitted to the Contract Laboratory Program for TCL analysis. Shipping to the laboratory will be handled by a field investigation team tasked by EPA. A map is attached indicating the sample points.

Sediment samples will be collected from waterways in the swamp by an Eckmann dredge in locations indicated on the attached map.

This phase will also involve the exploration of ground water levels in the swamp and the methodologies for the installation of well points in the area. Ground water levels and well point installation will be tested in six locations as indicated on the attached map. Due to the uncertainties in the soil stability and possible cave-ins of the well hole, several methods may be attempted. The holes will be advanced to approximately ten feet depending on the actual depth of ground water.

The second phase will consist of ground water samples taken from well points from locations determined by the results of the Phase I soil sample results. Biota samples will be collected in the second phase as well.

Personnel health and safety will be monitored by a HNu phototionizer. The samplers and augerers will be dressed in Level D protection. An upgrade to Level C protection will be instituted if a 5 unit reading is indicated on the HNu. The action level is taken from the Petro Processors remedial effort. Since the waste streams from the Petro Processors site have been identified in Devil's Swamp, the same action level will be used. One TLV for hexachlorobutadiene has been correlated to an HNu reading of 5 units. This indicator compound has been determined from waste handling activities at the Petro Processors site. The atmosphere, sample collection piles and auger holes will be monitored for personnel protection.

Sincerely,

William B. De Ville
Administrator
I.A.S. Division

WBD/HFE/WRH/wh

Attachments

cc: Presley Hatcher
U.S. E.P.A., Region VI

REFERENCE 9

Ref 4

State of Louisiana

FRANK A. ASHBY, JR.
SECRETARY

B. JIM PORTER
ASSISTANT SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF ENVIRONMENTAL AFFAIRS
WATER POLLUTION CONTROL DIVISION

J. DALE GIVENS
ADMINISTRATOR

M E M O R A N D U M

TO: J. Dale Givens, Administrator

FROM: Kirk Cormier and Stanley Howes, III

RE: Devil's Swamp

DATE: June 23, 1980

Although man-made, the Devils Swamp lake in question exhibits all the characteristics of a natural bottomland lake. Other than the effluent, it receives water from natural drainage via Baton Rouge Bayou and surrounding swamp drainage which enter the lake through a system of several sloughs. The lake is roughly "U" shaped and is approximately 3KM in length. At its widest point it measures 175 meters wide. Average width is near 115 meters. Depths in the lake reach a maximum of 23 feet. The average midstream depth is 12 feet.

In sampling this lake, we picked midstream points roughly 200 meters apart, starting at the end of the lake furtherest from the effluent. At every other point we not only took a midstream profile at different depths, but also at several points (usually 5) from bank to bank. In all there were 23 points. All but one was "downstream" of the effluent. These profiles were run every week day starting June 6, 1980 through June 23, 1980.

The industrial discharge into this lake serves to agravate the natural tendency of this type of system to exhibit relatively low dissolved oxygen levels during the warm weather months. The upper layers of the water column that receive the benefit of oxygen released by photosynthetic activity was found to be quite high in D.O. considering the temperature, which in most cases was 30° to 33°C. D.O. saturation reached well above 100% in many instances. As best we could determine, the D.O. does not drop below an average of 50% saturation at a depth of 3 feet during the night. Oxygen could be found in the water down to approximately 7 feet where it diminished rapidly to less than .1 ppm.

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Other field parameters observed such as pH, specific conductance, and temperature varied with the depth sampled. Only the conductivity varied as the distance to the outfall decreased. Occasionally a pH of 8 was observed near the surface, however, the normal range was 6.5 to 7.8. Temperature varied with the depths sampled. It ranged from 22° at the bottom to 33°C near the surface. Conductivity at the start of the survey was averaging about 45 micromhos. At our last visit the readings were in excess of 200 micromhos. In all cases the conductivity increased as the distance to the outfall decreased. Conductivity of the outfall has increased since the start of the survey. It also increased as the depth decreased. For example a typical reading would be 25 micromhos at 17 feet and 63 micromhos at 1 foot. Lastly, secchi disk readings averaged 20 inches.

Most of what we observed, in the way of water quality, could be considered natural conditions for this type of system. However, water samples taken from the bottom of the lake showed very dark water that exhibited the "chemical" smell characteristic of the Rollins effluent. The bottom itself, especially near the outfall end of the lake is greatly impacted. Anytime the bottom is disturbed, oil bubbles to the surface. Mud samples taken from the effluent end of the lake were jet black, oily, and exhibited the smell mentioned above. The mud samples at the lower end of the lake were similar, but not as evidently impacted. It is our opinion that the effluent upon entering the lake drops to the bottom and does not completely mix. This is surely a major fact or in producing the septic conditions on the bottom. Also, it inpedes the degradation of the waste since it does not become very dilluted.

It is our opinion that the lake has reached more or less a static stage of recovery. Water quality will probably not get any better and due to other influences, such as increased discharge from Rollins or weather conditions, could worsen at times. Possible toxic substances not withstanding, close monitoring of the Rollins effluent for BOD, COD and conductivity will be necessary to prevent major problems in this lake. Due to the present condition of the bottom, complete recovery of this lake to ambient conditions, in our opinion, would take many years to occur even if the effluent was stopped today. Continuing discharge into the lake will hinder the recovery for as long as the discharge occurs.

Note: Since the start of the profile we have seen the lake go from apparently lifeless conditions to an abundance of wading birds, alligators, fish, frogs and aquatic insects. Strangely absent from the lake are snakes. We have not seen one since we have been out there. I can offer no explanation for this.

kg

PARAMETER AVERAGES

Midstream at 3 feet

	Average	Lower Limits	Upper Limits	Range
Temperature (°C)	29.99	28.7	31.2	2.5
Dissolved Oxygen (ppm)	3.51	1.6	5.1	3.5
Saturation O_2 (%)	46.0	----	----	----
Conductivity[2] (micromhos)	48.35	29.9	66.3	35.4
pH (standard units)	6.8	6.4	7.1	0.7

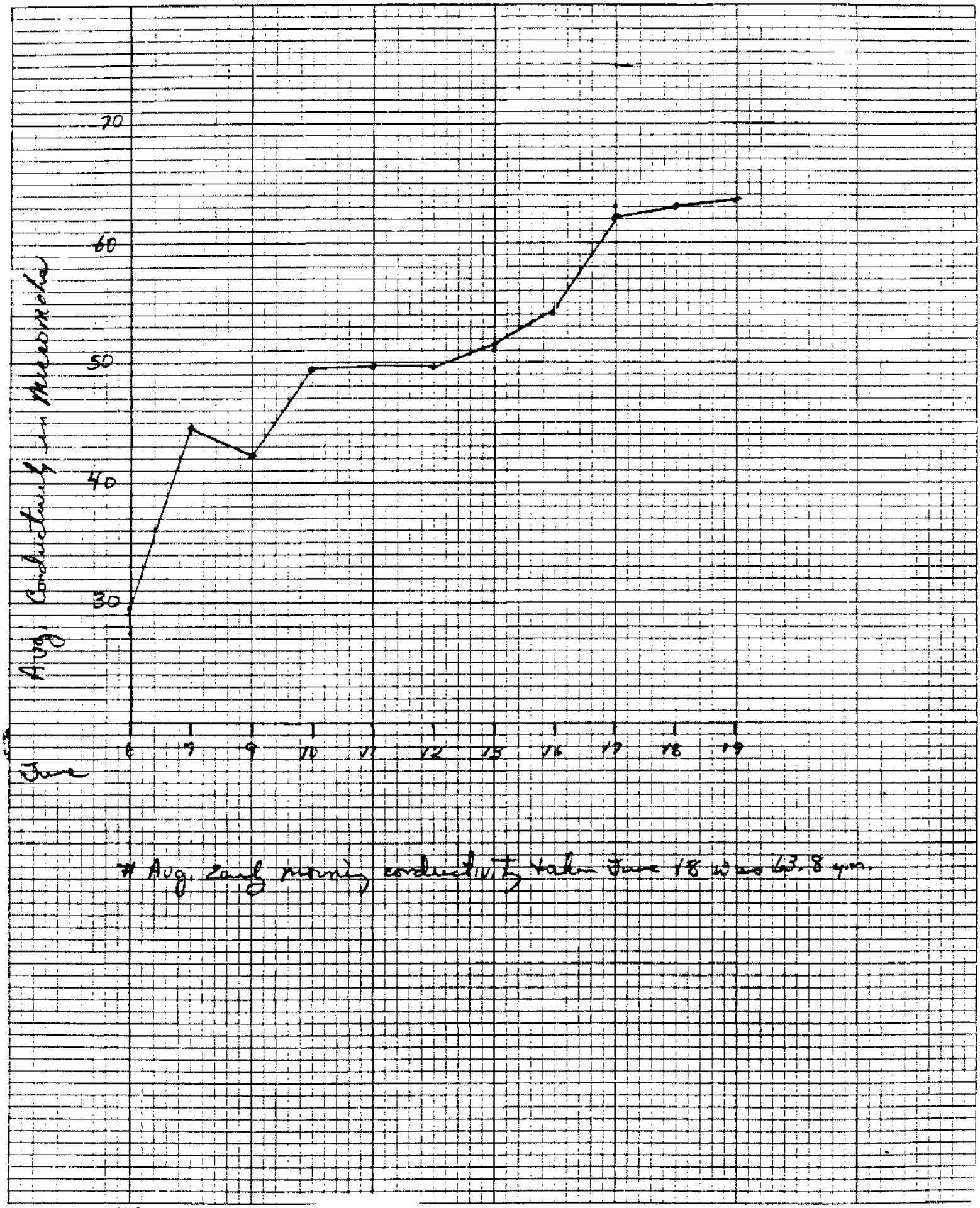
Lower End at 6 feet (IIB)

Temperature (°C)	27.55	24.0	31.0	6.0
Dissolved Oxygen (ppm)	0.66	0.1	2.3	2.2
Saturation O_2 (%)	7.5	----	----	----
Conductivity[2] (micromhos)	43.91	27.0	60.1	33.0
pH (standard units)	7.1	6.5	8.0	1.5

Effluent End at 6 feet (VIIIB)

Temperature (°C)	26.64	24.5	29.0	4.5
Dissolved Oxygen (ppm)	0.4	0.0	1.66	1.66
Saturation O_2 (%)	5.5	----	----	----
Conductivity[2]	41.95	35.0	68.0	33.0
pH (standard units)	6.9	6.4	7.4	1.0

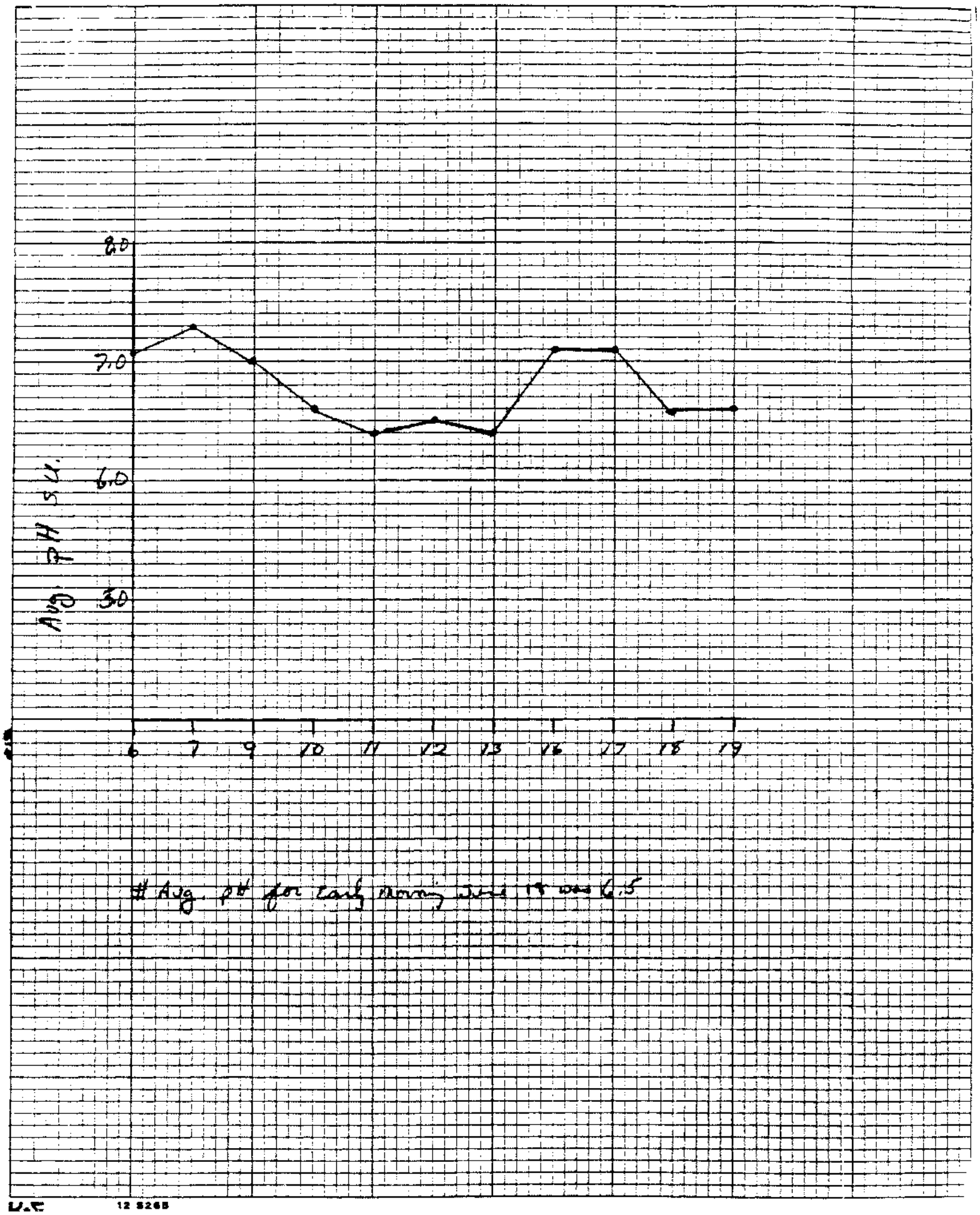
AVERAGE [redacted] at 3' depth from [redacted] morning to early afternoon



Avg. early morning conductivity taken June 18 was 63.8 μm.

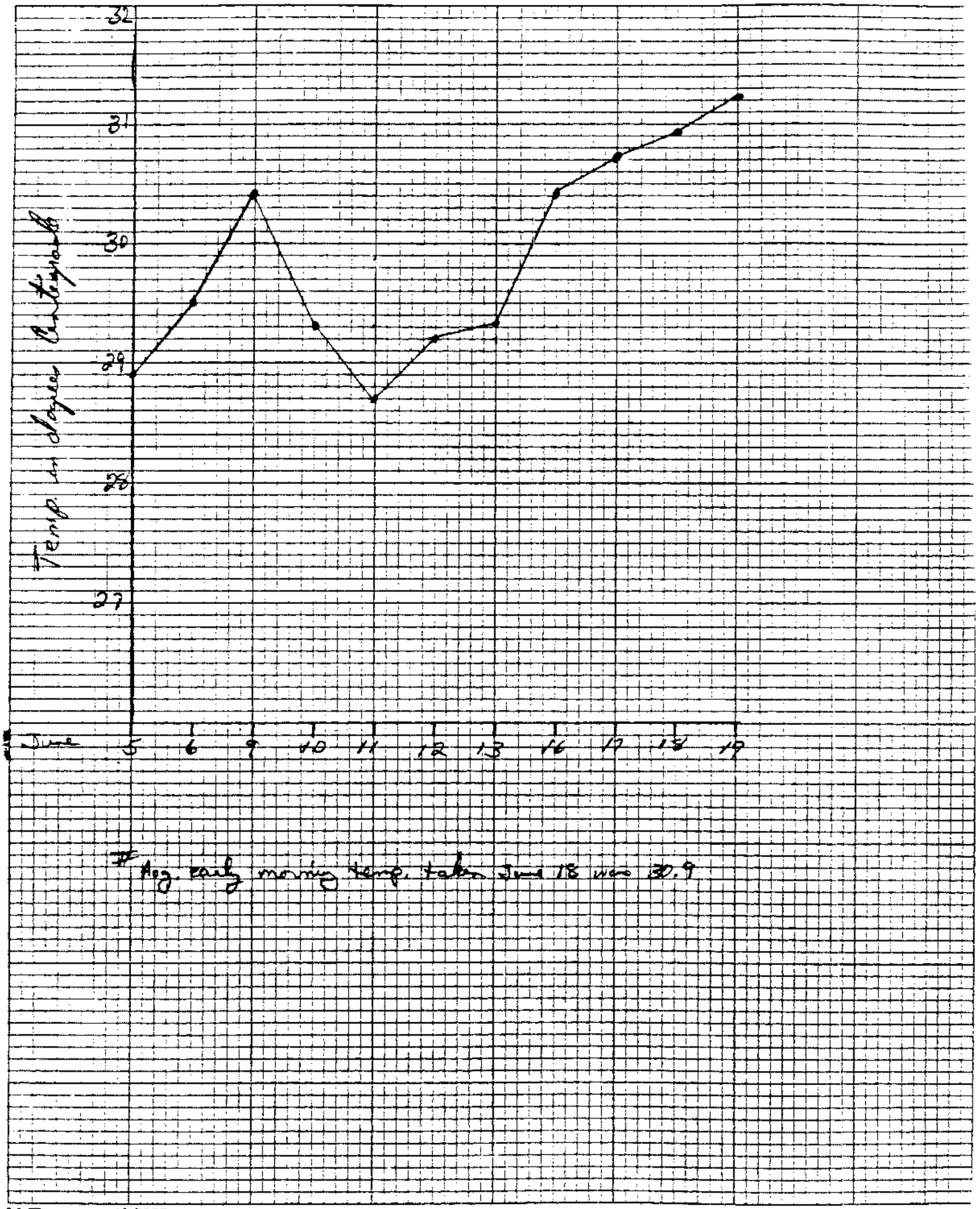
K-E 12 8265

from mid-morning to early afternoon



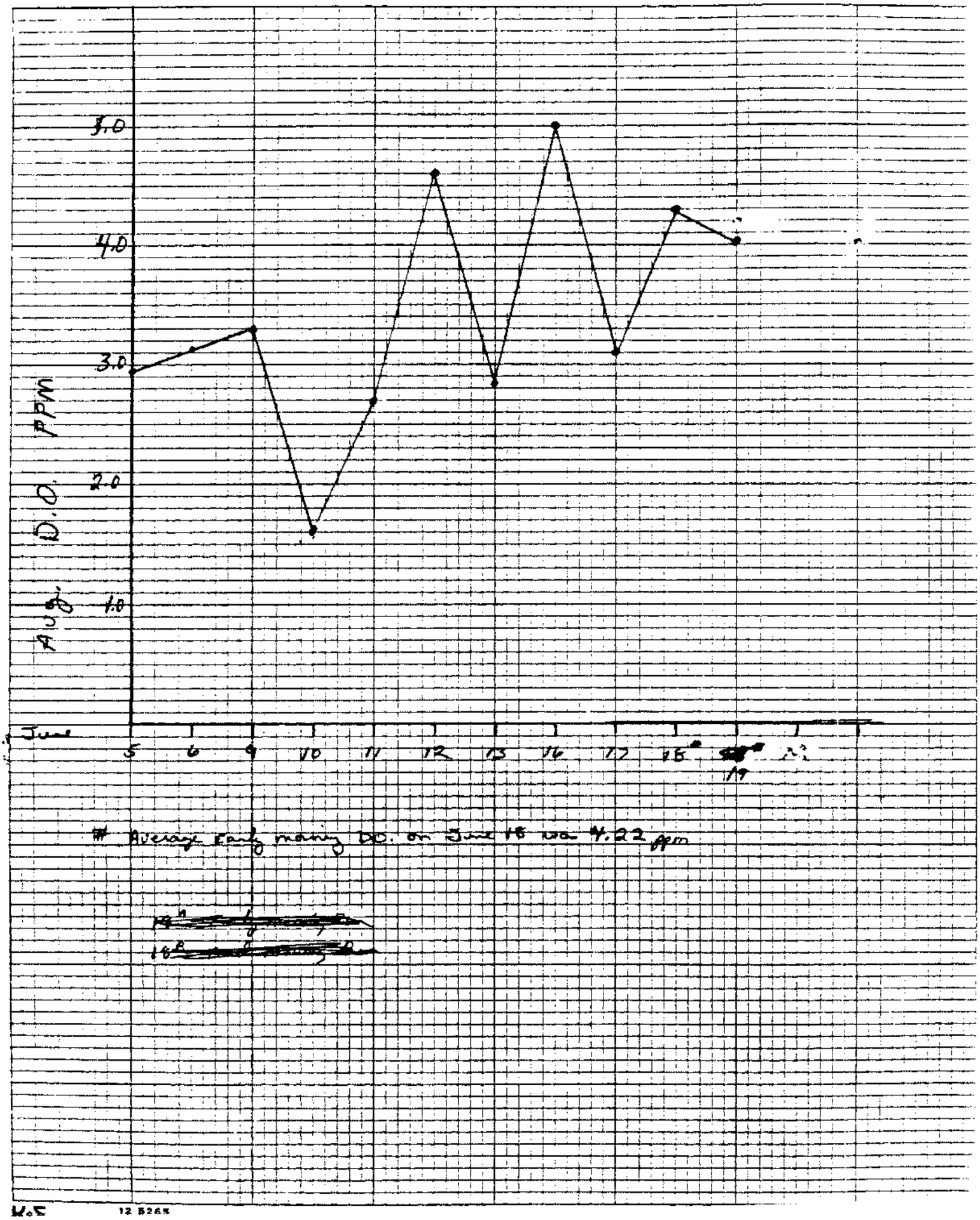
Avg. pH for early morning June 15 was 6.5

Average Temperature at midstream at 3' depth
taken mid-morning to early afternoon



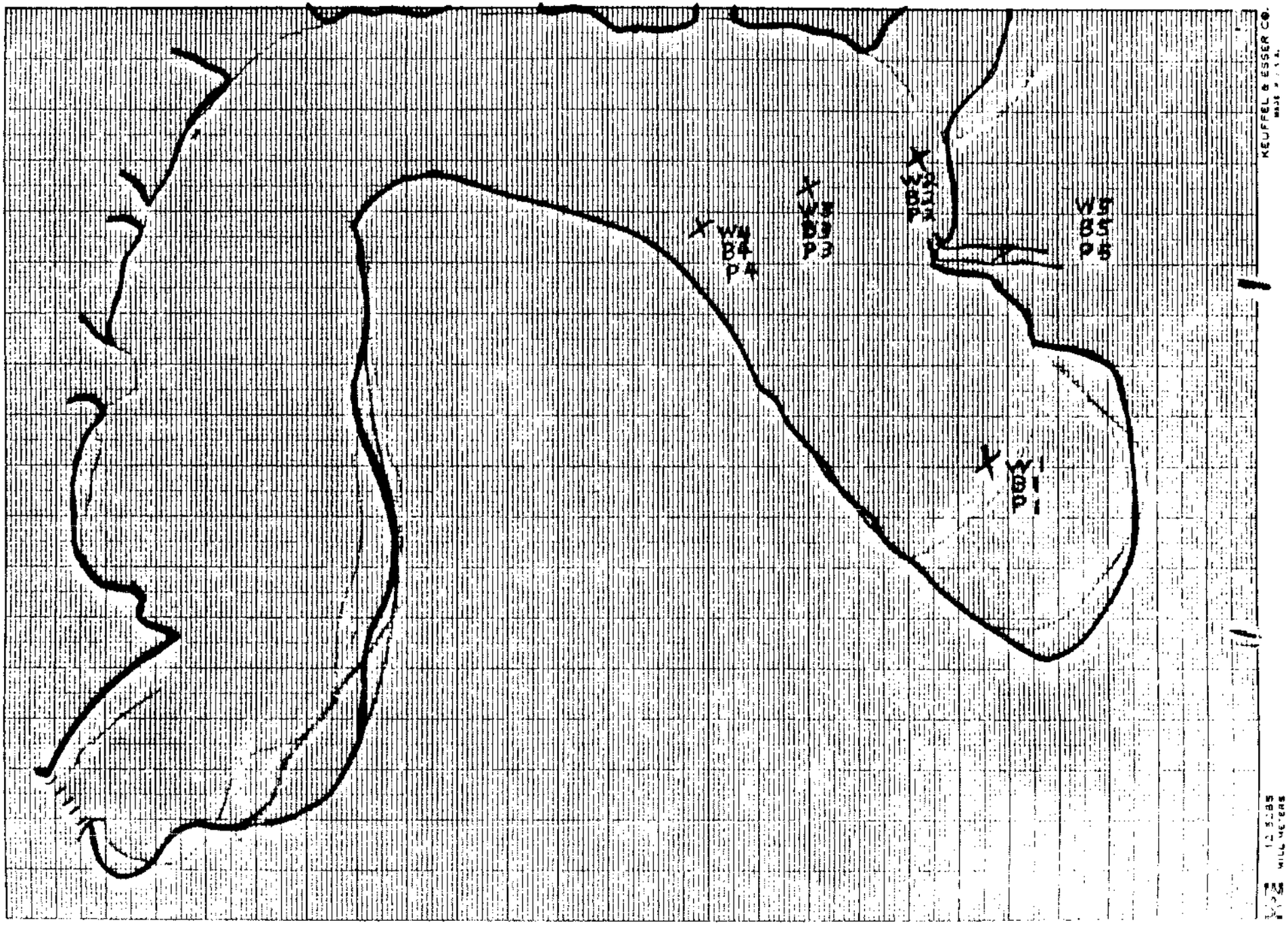
Avg. early morning temp. taken June 18 was 30.9

AVERA : D.O. Midstream at 3' taken mid-morning to early afternoon



Average Early morning D.O. on June 18 was 4.22 ppm

Sketch of Lake



REFERENCE 10

ECOLOGY AND ENVIRONMENT, INC.
REGION VI
MEMORANDUM

TO: Keith Bradley, Region VI, RPO

FROM: For K.H. Malone, Jr., RPM

DATE: September 9, 1985

SUBJ: Sampling Inspection at Petro-Processors Off-site (Devil's Swamp), Scotlandville, LA (LA345)
TDD#R-6-8501-20

On February 20 - March 2, 1985 the FIT collected soil and water samples from twenty-three (23) locations at Petro-Processors off-site (Devil's Swamp) near Baton Rouge, LA. A total of thirty-five (35) soil samples (including four duplicates), thirteen (13) water samples (including five rinsate blanks), and two high-hazard water samples were collected by the FIT to determine the nature and extent of possible contaminant migration from the Petro-Processors Brooklawn facility into the area known as Devil's Swamp. Devil's Swamp is located just south of the Brooklawn disposal ponds and north of the Mississippi River. Sample locations, sampling procedures, and inspection rational were described in a previous FIT memo (see T. Smith to K. Bradley memo dated January 11, 1985) and were duplicated during the field investigation.

Sample location descriptions (see attached map and photos) and analytical review comments (see attached Organic and Inorganic Review Summaries) are listed below:

Sample Location Descriptions

Sample location 01 (see photo #6)-Soil, 0-2' and 2'-4' depths, 450 ft. SSW of site, along low area between divergent forks of Baton Rouge Bayou. A groundwater sample was also collected from this borehole.

Sample location 02 (no photo)-Soil, 0-18" depth, 450 ft. SE of site, along low area between divergent forks of Baton Rouge Bayou. No deeper soil sample was collected due to an OVA reading of 50 ppm. Additionally, no groundwater appeared in the borehole.

Sample location 03 (see photo #5)-Soil, 0-18" depth, 750 feet south of site, from swale just west of braided fork of Baton Rouge Bayou. A groundwater sample was also collected from the borehole and was analyzed as a high-hazard sample due to discoloration and above 1,000 ppm OVA reading. Likewise, no deeper soil sample was collected.

Sample location 04 (no photo)-Sediment, from channel of divergent fork of Baton Rouge Bayou, 750 ft. SSW of site.

Reviewed by 6AW-SC
date

Sample location 05 (see photo #11)-Soil, 0-2' and 2'-4' depths 1,000 ft. south of site, from swale just east of braided fork of Baton Rouge Bayou. No groundwater appeared in this borehole.

Sample location 06 (no photo)-Soil, 0-2' and 2'-4' depths, 1300 ft. SE of site, along low area between Baton Rouge Bayou and ridge. A groundwater sample was also collected from the borehole.

Sample location 07 (see photo #1)-Sediment, from channel of divergent fork of Baton Rouge Bayou, 1250 ft. SSE of site.

Sample location 08 (see photo #8)-Soil, 0-2' depth, 1700 feet SSE of site, from low area between divergent forks of Baton Rouge Bayou. No deeper soil was collected due to OVA reading of 50 ppm. A groundwater sample was collected from the borehole.

Sample location 09 (no photo)-Sediment, from channel of divergent fork of Baton Rouge Bayou, 2000 ft. SSE of site.

Sample location 10 (see photo #7)-Soil, 0-2' and 2'-4' depths, 2000 ft. south of site, from low area just west of braided fork of Baton Rouge Bayou. No groundwater appeared in the borehole.

Sample location 11 (see photo #2)-Sediment, from channel of divergent fork of Baton Rouge Bayou, 1700 ft. SSW of site.

Sample location 12 was planned but was not sampled due to flooding conditions which restricted access to that portion of the swamp.

Sample location 13 (no photo)-Soil, 0-2' and 2'-4' depths, 2300 ft. SSW of site, along swamp area at mouth of braided fork of Baton Rouge Bayou. A groundwater sample was also collected from the borehole.

Sample location 14 (no photo)-Sediment, from swamp area 2700 ft. SSW of site, at mouth of divergent fork of Baton Rouge Bayou.

Sample location 15 (no photo)-Sediment, from swamp area 2600 ft. SW of site, at mouth of braided fork of Baton Rouge Bayou.

Sample location 16 (no photo)-Soil, 0-2' depth, 2300 ft. SW of site, from stained soil area near beaver pond within cleared area. A groundwater sample was collected from the borehole. No deeper soil sample was taken due to OVA reading of 50 ppm.

Sample location 17 (no photo)-Sediment, from channel of divergent fork of Baton Rouge Bayou, 2200 ft. SW of site.

Sample location 18 (see photo #3)-Soil, 0-2' and 2'-4' depths, 2800 ft. SW of site, from swamp area between braided forks of Baton Rouge Bayou. A groundwater sample was also collected from the borehole.

Sample location 19 (see photo#4)-Sediment, from channel of braided fork of Baton Rouge Bayou, 3000 ft. SW of site.

Sample location 20 (no photo)-Sediment, from swamp area 3,000 ft. SSE of site, near mouth of divergent fork of Baton Rouge Bayou.

Sample location 21 (no photo)-Sediment, from swamp area 2500 ft. SE of site, near mouth of main channel of Baton Rouge Bayou.

Sample location 22 (no photo)-Soil, 0-2' depth, 10 ft. north of main channel within cleared area. A groundwater sample was also collected from this borehole and was analyzed as a high-hazard sample due to discoloration and above 1,000 ppm OVA readings. Likewise, no deeper soil sample was collected.

Sample location 23 (see photo #9)-Soil, 0-2' and 2'-4' depths, 450 ft. south of site, 100 ft. north of well P-19. A groundwater sample was also collected from this borehole.

Sample location 24 (see photo #10)-Soil, 0-2' and 2'-4' depths, 30 ft. south of main channel in cleared area. A groundwater sample was also collected from the borehole.

It should be explained that OVA readings were continuously taken during the Level "C" sampling process. When readings reached the 50 ppm level (the action level for Level "B" personnel protection), all augering activity stopped. Sample location access, time constraints, and difficult terrain prevented the use of Level "B" equipment during this preliminary inspection.

QA Summary

Inorganic Water: MF2204, MF2207, MF2211, MF2213, MF2215, MF2216, MF2218, MF2225, MF2226, MF2231, MF2234, MF2239, MF2240.

Antimony, arsenic and selenium spike recoveries were low; therefore, reported concentrations of these metals may also be low. Mercury duplicate RPD was above QC limits.

Inorganic Soil: MF2012, MF2092, MF2093, MF2094, MF2095, MF2097, MF2098, MF2099, MF2100, MF2201, MF2202, MF2203, MF2205, MF2206, MF2208, MF2209, MF2210, MF2212, MF2214, MF2217.

Spike recoveries for antimony, selenium, silver, and cyanide were low; therefore, reported concentrations may also be low. Mercury spike recovery was high; therefore, reported concentrations may also be high. Iron duplicate RPD was above QC limits.

Inorganic Soil: MF2219, MF2221, MF2222, MF2223, MF2224, MF2227, MF2228 MF2229, MF2230, MF2232, MF2233, MF2235, MF2236, MF2237 MF2238.

Spike recoveries for antimony, arsenic, manganese, selenium, silver, tin and cyanide were low; thus, reported concentrations may also be low. Mercury spike recovery was high; thus, reported concentrations may also be high. All duplicate RPD's were within limits.

All reported concentrations of lead above 32 ppm in soil samples are questionable due to the analysis method used. Results should be considered as estimates.

Inorganic High Hazard: MF5139, MF5149.

Data has been rejected because of low recovery (25%) of lead in the Laboratory Control Sample.

Organic High Hazard: F5139, F5149.

D-14 terphenyl recovery was high in sample F5139. 2-Chlorophenol matrix spike recovery was 0% in one spiked sample. 4-Nitrophenol matrix spike recovery was 0% in all three spiked samples. Since no acid compounds were detected in the samples, this poor recovery does not impact the results. It appears that matrix spike solution was added to sample F5139, VOA fraction, therefore 1,1-dichloroethene, trichloroethene, benzene, toluene, and chlorobenzene are not sample contaminants. The samples should probably have been analyzed under a lower concentration protocol since no significant levels of contamination were detected.

Organic Water Samples: FB173, FB176, FB180, FB182, FB184, FB185, FB187, FB194, FB196, FB200, FB203, FB209, FB210.

All surrogate recoveries, matrix spike recoveries and duplicate RPD's were within QC limits. The data is acceptable.

Organic soil samples: FB183, FB186, FB188, FB190, FB191, FB192, FB193, FB195, FB197, FB198, FB199, FB201, FB202, FB204, FB205, FB206, FB207.

Surrogate recovery for D5-nitrobenzene was 0% on FB191, FB191MS and FB191MSD Surrogate recovery for 2,4,6-tribromophenol was 0% on FB191MS and FB191MSD. All other surrogate recoveries were within QC limits. All VOA matrix spike recoveries and duplicate RPD's were within QC limits. 9 of 24 BNA matrix spike recoveries were low or 0%. The lab indicates that recovery problems are due to dilution of the sample. One duplicate RPD was outside of QC limits.The data is acceptable.

Organic Soil Samples: FB066, FB162, FB163, FB164, FB165, FB166, FB167, FB168, FB169, FB170, FB171, FB172, FB174, FB175, FB177, FB178, FB179, FB181.

All surrogate recoveries were within QC limits. 4-Nitrophenol recovery was 0% on both the low level MS and MSD. The detection limit was too high to detect at spike level. Medium level - 3 of 14 BN matrix spike recoveries were high but RPD's were within limits. 0% recovery of 4-nitrophenol. Seven of the remaining eight acids had high recoveries, however RPD's were acceptable. Data is acceptable.

Data Interpretation:

Water:

Hexachlorobutadiene and hexachlorobenzene are the only organics detected in the water samples that are significant. These compounds were detected in samples collected from stations 08, 23 and 24. Metals concentrations in samples from stations 06, 08, 13, 16, 18 and 23 are much higher than concentrations from stations 01 and 24. Drinking water standards for arsenic, barium, cadmium, chromium, iron, lead, manganese, and mercury were all exceeded in the six high

metals concentration samples. Despite the lower metals concentrations in stations 01 and 24, drinking water standards for cadmium, iron, lead, and manganese were also exceeded in both of these samples. The standard for barium was also exceeded in station 01.

Soils:

Results of the soils metals analysis indicate that the composition of the soil in the swamp is highly variable, both laterally and vertically as evidenced by the variance of the field duplicate samples and in samples collected from different depths at the same location. Ten metals (aluminum, arsenic, barium, cadmium, iron, lead, manganese, tin, vanadium, and zinc) all varied by an order of magnitude from their lowest to their highest concentration. It is likely that all of these metals are present in elevated concentrations in some of the samples, however, the lack of background samples severely limits the data interpretation. Sample Stations 05, 06, 08, 09, 13, 16, 17, 18, 19, 20 and 21 all show four or more of these metals at what appears to be elevated concentrations. It was noted that when samples were collected from two different depths at a given location, the concentration of lead was always higher in the shallower (0-2') sample.

Hazardous substance list (HSL) organics detected in the soil samples, including high hazard samples, are tabulated below along with the sample stations where they were detected. Phthalates and other common laboratory contaminants are not included in the table.

Compound	HSL Organics Detected Sample Station (Concentration in ppb)
1,3-dichlorobenzene	06U(25J), 06UD(375), 13U(250), 21(260J), 22(1100J)
1,4-dichlorobenzene	07(620J), 13U(110J), 22(1200J)
hexachlorobutadiene	02(460), 02D(1300J), 03U(300,000), 05U(140J), 07(4400), 08(8900), 09(130,000), 13U(170J), 20(14,000), 21(350J), 23U(91J), 23UD(905), 24U(1700J), 24L(45J)
hexachlorobenzene	02(5600), 02D(12,000), 05U(250), 06U(110J), 06UD(200), 07(11,000), 08(35,000), 09(49,000), 10U(180J), 10D(40J), 11(200J), 20(32,000), 21(790), 22(54,000), 23U(220), 23UD(320), 24U(27,000), 24D(1200)
1,2-trans-dichloroethene	03U(2300)
trichloroethene	03U(1300), 03D(23,000)
phenanthrene	07(460J), 17(350J)
N-nitrosodiphenylamine	04D(420)
chlorobenzene	03D(23,000), 09(520J)
1,2,4-trichlorobenzene	13U(57J)
1,1-dichloroethene	03L(26,000)
benzene	03L(26,000)
toluene	03(23,000)

D - duplicate sample
J - estimated concentration
U - 0-2' sample
L - 2'-4' sample

Sampling Locations for
Petro-Processors Off-Site

Sampling locations shown as: ●

Scale: 1 inch = 800 feet

North

USGS Scotlandville, La
1970

Tentatively identified compounds detected in samples consisted of alkanes and alkenes, chlorinated compounds, non-HSL aromatics and unknowns. The reported total concentrations are all estimates and are tabulated below. The number in parenthesis following the total concentration is the number of compounds of the class reported.

Tentatively Identified Compounds
(concentration in ppb)

U = 0-2' sample, L = 2'-4' sample, D = duplicate sample, P = present

Station Number	Alkanes, Alkenes, and Alcohols	Chlorinated Compounds	Non-HSL Aromatics	Unknowns	Other
01U	11,880 (7)				
01L	10,530 (5)			6830 (5)	
02	7420 (7)		180 (1)	660(3)	
02D	5300 (3)				
03U		192,400 (9)		1600 (1)	
03L		49,000 (2)		4000 (2)	
04				740 (1)	
04D	586 (2)			1200 (1)	
05U					
05L					
06U	80 (1)		P (1)		
06UD	290 (2)		100 (1)	200 (1)	
06L	190 (2)				
07	7850 (6)	33 (1)	1990 (2)	13, 580 (10)	
08		7000 (2)	4000 (2)	4000 (1)	
09		216,400 (10)		2400(1)	
10U					
10L					
11					
13U	200 (2)		890 (4)	2380 (10)	
13L				790 (3)	
14	4050 (8)			7280 (8)	
15	6440 (5)			3180 (4)	
16	200 (1)				Sulfur, 1000
17	21,240 (13)			6750 (3)	
18U	12,770 (5)			22,070 (10)	
18L	11,090 (5)			7,550 (6)	
19	12,840 (5)			25,820 (9)	
20	9000 (2)	45 (1)	5000 (1)	64,333 (10)	
21	4250 (4)			15,620 (12)	Sulfur, 600
22U				300 (1)	
22L				2000 (1)	
23U				80 (1)	
23UD				80 (1)	
23L					
24U			4000 (1)	2000 (2)	
24L					

Broad unresolved chromatographic peaks were present in samples collected from station 07, 11, 13, 14, 17 and 21. This peak is characteristic of oily material. Stations 02, 15, 18 19 and 20 also contained this peak at a very low intensity.

Summary:

HSL organics were detected in all but five of the soil sample stations, however four of these stations (14, 15, 18 and 19) showed significant levels of contamination with alkanes and unknown organics. Three water samples, stations 08, 23 and 24 showed HSL organic contamination.

Eleven of the soil samples (05, 06, 08, 09, 13, 16, 17, 18, 19, 20 and 21) showed what appears to be metals contamination. Six other stations, 01 (2'-4'), 02, 07, 15, 23 (0-2'), and 24 (0-2') contained lower levels of metals that may also be elevated. Water samples from stations 06, 08, 13, 16, 18 and 23 all contained much higher levels of metals than samples from stations 01 and 24.

Due to the elevated levels of metals in many of the samples, it is difficult to determine if these are characteristically high for the region or are a result of contamination which may have emanated from the Brooklawn site. Additionally, the results indicate three possible types of contamination; namely 1) metals, 2) HSL organic compounds, and 3) tentatively identified compounds from a possible petroleum source. The elevated results from one given type of contamination don't correlate with elevated levels of the other types, which indicates the possibility of three (or more) separate events contributing to the contamination.

Considering the complex nature of the sample results, additional sampling should be performed at the area around and upstream from the site. However, specific sampling recommendations on this site are difficult to make due to the unusually restrictive terrain and the lack of appreciable access to most potential sampling locations. Further sampling would necessitate the drilling of deeper holes and the selection of different sampling locations to further define the zone of contamination. Additional sampling can be accomplished only after access has been greatly improved through the construction of stream-crossing points and primitive roads. Only then can level "B" (the required level of protection) sampling be attempted. Even then, sample collection will be difficult and will require "portable" decontamination stations or decontamination "sub-stations" to allow for tank changeover and preliminary personnel decontamination (some sample locations are 45-60 minutes from the closest suitable location to establish as a command post area). In addition, any future sampling inspection in Devil's Swamp should be attempted prior to February's floods. Ideally, a November - January time frame would suffice. A spring inspection is impossible due to the floods which hit the swamp in March, and a summer inspection would be dangerous due to the infestation of poisonous snakes, spiders, and alligators.

The Petro-Processors' site is currently under Remedial Investigation (RI). Portions of the RI encompass parts of Devil's Swamp. Although contamination has been identified in Devil's Swamp, conditions could change as a result of the RI and any subsequent remedial actions.

Because of the complexity of future sampling and the potential for change as a result of remedial work, it is recommended that further sampling of Devil's Swamp be postponed pending completion and results of the remedial actions.

CASE NUMBER: 3874

SITE NAME/CODE: Petro Processors
LA 345

CONCENTRATIONS (ppb)

PARAMETER	EPA Sample Numbers										Ambient Background 1.	
	MF2204	MF2225	MF2226	MF2218	MF2215	MF2211	MF2234	MF2240	MF2207	MF2213	Western U.S. 2.	Eastern U.S. 2.
Matrix Type	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Soil	Soil
Aluminum	32,500	507,000	141,000	109,000	109,000	98,700	342,000	26,600	170		58,000	33,000
Antimony											.47	.52
Arsenic R	50	374	238	187		162	150	45			5.5	4.8
Barium	1560	11,600	6030	7720	4990	5580	8650	803	29		580	290
Beryllium	5	60	18	30	17	17	54				0.68	0.55
Cadmium	26	328	263	586	358	145	315	27			<1	<1
Chromium	40	582	226	156	151	147	444	36			41	33
Cobalt	46	476	242	639	179	234	597	64			7.1	5.9
Copper	77	782	352	343	232	219	654	43			21	13
Iron	48,600	622,000	225,000	319,000	353,000	431,000	622,000	58,700	718	72	21,000	14,000
Lead	515	5870	6280	5230	2780	991	6660	475	11	4.7	17	14
Manganese	5640	52,500	16,900	38,700	38,500	45,300	70,200	10,400	36		380	260
Mercury *	1.0	15.8	5.29	7.2	4.53	3.34	16.8	1.29	0.15	.39	0.046	0.081
Nickel	66	809	299	329	241	408	636	64			15	11
Selenium R										3.7	.23	.30
Silver									29		-	-
Thallium					7.2						9.1	7.7
Tin		69	40				41	29.2			.90	.96
Vanadium	94	792	358	603	357	330	1032	67			70	43
Zinc	389	4550	2270	4530	2530	1680	5090	370	33	38	55	40
Cyanide		9.8					25					
Calcium	27,900	296,000	109,000	169,000	227,000	271,000	390,000	60,800				
Magnesium	9,700	121,000	40,100	46,500	76,000	83,000	126,000	16,900				
Potassium	5100	25,300	8280	20,700	11,400	14,000	20,100	3090				
Sodium	7360	62,600	12,300	37,900	90,400	72,800	54,000	15,300				
Station No.	01	06	08	13	16	18	23	24				
Sample Station Location	450'SSW OF SITE BETWEEN DIVERGENT FORKS OF B.R BAYOU	1300'S.E.OF SITE, LOW AREA BETWEEN B.R. BAYOU+BRIDGE	1700'S.S.E.OF SITE BETWEEN DIVERGENT FORKS OF B.R.BAYOU	2300'S.S.W. OF SITE, SWAMP AREA AT MOUTH OF BRAIDED FORK B.R.BAYOU	2300'S.W.OF SITE, STAINED SOIL FROM BEAVER POND WITHIN CLEARED AREA	2800'S.W.OF SITE, SWAMP AREA BETWEEN BRAIDED FORK OF B.R.BAYOU	100'N.OF WELL P-19 450'S.OF SITE	30'S.OF MAIN CHANNEL	2-21 FIELD RINSATE BLANK	2-22 FIELD RINSATE BLANK		

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R-spike sample recovery is not within control limits

*-duplicate analysis is not within control limits

1. Values obtained from "Element Concentrations in Soils and Other Surface Materials of the Conterminous United States", dated 1984. U.S.G.S. Professional Paper 1270.

2. Reference for East/West Division is the 96°W longitudinal line which bisects Region VI.

CASE NUMBER: 3874

SITE NAME/CODE: Petro Processors

LA 345

CONCENTRATIONS (ppm)

PARAMETER	EPA Sample Numbers										Ambient Background 1.	
	MF2216	MF2231	MF2239								Western U.S. 2.	Eastern U.S. 2.
Matrix Type	Water	Water	Water								Soil	Soil
Aluminum	280										58,000	33,000
Antimony		58									.47	.52
Arsenic											5.5	4.8
Barium											580	290
Beryllium											0.68	0.55
Cadmium											<1	<1
Chromium											41	33
Cobalt											7.1	5.9
Copper	27	51	54								21	13
Iron	615	256									21,000	14,000
Lead	5.5		2.4								17	14
Manganese	31										380	260
Mercury	0.22	4.41	1.08								0.046	0.081
Nickel											15	11
Selenium											.23	.30
Silver											-	-
Thallium											9.1	7.7
Tin											.90	.96
Vanadium											70	43
Zinc	40	22	19								55	40
Cyanide												
Calcium												
Magnesium												
Potassium												
Sodium	884											
Station No.												
Sample Station Location	2-23 FIELD RINSATE BLANK	3-1 FIELD RINSATE BLANK	3-2 FIELD RINSATE BLANK									

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2. Reference for East/West Division is the 96°W longitudinal line which bisects Region VI.

CASE NUMBER: 3874

SITE NAME/CODE: Petro Processors
LA 345

CONCENTRATIONS (ppm)

PARAMETER	EPA Sample Numbers										Ambient Background 1.	
	MF2203	MF2202	MF2205	MF2206	MF2212	MF2097	MF2098	MF2235	MF2236	MF2221	Western U.S. 2.	Eastern U.S. 2.
Matrix Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Aluminum	7438 *	10,327 *	4971 *	9359 *	2768 *	1395 *	1696 *	6563 *	12,493	10,645	58,000	33,000
Antimony	R	R	R	R	R	R	R	R	R	R	.47	.52
Arsenic								4.0 R	R	6.5 R	5.5	4.8
Barium	123	125	133	251	46	32	39	136	186	166	580	290
Beryllium	0.4	0.6		0.4				0.5	0.8	0.8	0.68	0.55
Cadmium			2.1	4.3			2.9	5.1		4.4	<1	<1
Chromium	10	13	7	14	5			10	15	19	41	33
Cobalt	4	5		6	7			5	6	10	7.1	5.9
Copper					15			17	26	39	21	13
Iron	9271 *	13,593 *	6930 *	10026 *	3322 *	1682 *	2389 *	8658	14,060	12,543	21,000	14,000
Lead	72	27	92	128	39	36	53	127	22	268	17	14
Manganese	388	404	301	417	114	57	88	372 R	594 R	440 R	380	260
Mercury									0.8		0.046	0.081
Nickel											15	11
Selenium	R	R	R	R	R	R	R	R	R	R	.23	.30
Silver	R	R	R	R	R	R	R	R	R	R	-	-
Thallium		3			2						9.1	7.7
Tin								25 R	23 R	R	.90	.96
Vanadium	14.7	19.4	11.4	17.9	5.3	3.2	6.9	14.7	22.9	22.7	70	43
Zinc		8	2	8				19	27	53	55	40
Cyanide	R	R	R	R	R	R	1.5 R	R	R	R		
Calcium	1108	1517	1122	1423	414	334	493	1281	2312	1961		
Magnesium	919	1685	721	1108	356		200	947	1820	1432		
Potassium	582	939	353	504	646			712	974	864		
Sodium	558	575	553	567	649	474	562	676	713	785		
Station No.	01	01	02	02	03	04	04	05	05	06		
Sample Station Location	450'S.S.W. OF SITE BETWEEN DIVERGENT FORKS OF B.R. BAYOU 0-2'	0-4'	450'S.E. OF SITE, LOW AREA BETWEEN DIVERGENT FORKS OF B.R. BAYOU 0-18"	DUPLICATE	750'S. OF SITE, SWALE W. OF FORK OF B.R. BAYOU	750'S.S.W. OF SITE, DIVERGENT FORK B.R. BAYOU	DUPLICATE	1000'S. OF SITE 0-2'	2-4'	1300'S.E. OF SITE, LOW AREA BETWEEN B.R. BAYOU AND RIDGE 0-2'		

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2. Reference for East/West Division is the 96°W longitudinal line which bisects Region VI.

CASE NUMBER: 3874

SITE NAME/CODE: Petro Processors
LA 345

CONCENTRATIONS (ppm)

PARAMETER	EPA Sample Numbers										Ambient Background 1.	
	MF 2223	MF2224	MF2012	MF2227	MF 2092	MF2228	MF2229	MF2095	MF2217	MF2219	Western U.S. 2.	Eastern U.S. 2.
Matrix Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Aluminum	10,464	11,951	10,143 *	10,423	9,259 *	6081	6003	3013 *	14,183*	12,983	58,000	33,000
Antimony	R	R	R	R	R	R	R	R	R	R	.47	.52
Arsenic	4.8 R	R		4.1 R	14.7	4.9 R	R		15.8	24.6 R	5.5	4.8
Barium	153	154	296	120	205	111	111	65	200	211	580	290
Beryllium	0.7	1	0.5	0.7	0.4	0.5	0.5		0.6	0.8	0.68	0.55
Cadmium	3.9		3.4	5.1	17.4			5.7	14.1	7.5	<1	<1
Chromium	15	16	12	14	12	9	18	5	17	16	41	33
Cobalt	11	10	5	12	13	6	5		17	20	7.1	5.9
Copper	20	19		16	16	9	9	11	30	19	21	13
Iron	13,586	18,641	10,488 *	13,718	10,716 *	8514	9116	3880 *	13,692*	15,381	21,000	14,000
Lead	195	25	79	185	236	86	46	68	319	93	17	14
Manganese	441 R	498 R	399	498 R	395	390 R	380 R	124	357	461 R	380	260
Mercury							0.2		0.3	R	0.046	0.081
Nickel											15	11
Selenium	R	R	R	R	R	R	R	R	R	R	.23	.30
Silver	R	R	R	R	R	R	R	R	R	R	-	-
Thallium									3		9.1	7.7
Tin	62 R	R		R		R	R		36	R	.90	.96
Vanadium	21	27.1	17.5	24.1	20.5	14.3	13.1	8	22.2	25.3	70	43
Zinc	45	24		40	56	15	7		143	143	55	40
Cyanide	R	R	R	R	R	R	R	R	R	R		
Calcium	1871	2115	1899	1701	1728	1333	1138	566	2343	2392		
Magnesium	1418	2241	1407	1435	1026	996	953	403	1667	2272		
Potassium	561	1263	423	842	487	545	468	714	660	1453		
Sodium	810	851	941	688	859	726	706	489	886	945		
Station No.	06	06	07	08	09	10	10	11	13	13		
Sample Station Location	0-2' DUPLICATE	2-4'	250'S.E. OF SITE, CHANNEL OF DIVERGENT FORK B.R. BAYOU	1700'S.S.E. OF SITE, DIVERGENT FORK B.R. BAYOU	2000'S.S.E. OF SITE, DIVERGENT FORK B.R. BAYOU	LOW AREA W. OF BRAIDED FORK B.R. BAYOU, 0-2'	2-4'	1700'S.S.W. OF SITE, DIVERGENT FORK B.R. BAYOU	2300'S.S.W. OF SITE DIVERGENT FORK B.R. BAYOU 0-2'	2-4'		

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2. Reference for East/West Division is the 96°W longitudinal line which bisects Region VI.

CASE NUMBER: 3874

SITE NAME/CODE: Petro Processors
LA 345

CONCENTRATIONS (ppm)

PARAMETER	EPA Sample Numbers										Ambient Background 1.	
	MF2099	MF2100	MF2214	MF2201	MF2209	MF2210	MF2208	MF2093	MF2094	MF2222	Western U.S. 2.	Eastern U.S. 2.
Matrix Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Aluminum	8922 *	10,283*	11,516 *	19,198 *	12,110*	12,194*	15,026*	13,122*	16,225*	7521	58,000	33,000
Antimony	R	R	R	R	R	R	R	R	R	R	.47	.52
Arsenic	2.6	6.2	4.4	31.9	17.8	4.6	3.8	2.9	11.1	R	5.5	4.8
Barium	122	115	166	193	174	176	203	235	314	215	580	290
Beryllium	0.5	0.5	0.7	0.8	0.8	0.7	0.8	0.7	0.8	0.3	0.68	0.55
Cadmium	2.3	2.7		16	12.5		2.1	21.8	40.6	3.2	<1	<1
Chromium	14	12	14	24	15	16	18	14	28	10	41	33
Cobalt	5	4	8	10	14	12	8	12	12	10	7.1	5.9
Copper	7		16	10	22	19	18			9	21	13
Iron	8195 *	9217 *	12,336*	17,638 *	14,907*	19,363*	17,851*	14,100*	16,713*	9408	21,000	14,000
Lead	43	124	27	302	253	21	83	176	189	161	17	14
Manganese	282	275	389	349	641	645	406	397	443	299 R	380	260
Mercury		1.2					R				0.046	0.081
Nickel					18	20	19				15	11
Selenium	R	R	R	R	R	R	R	R	R	R	.23	.30
Silver	R	R	R	R	R	R	R	R	R	R	-	-
Thallium					4		4			2	9.1	7.7
Tin	34		44		176	68				R	.90	.96
Vanadium	17.3	18.2	20.9	28.7	24	25.1	23.8	22.6	29.3	14.5	70	43
Zinc	22	41	36	96	135	53	57	31	79	20	55	40
Cyanide	R	R	R	R	R	R	R	2 0 R	3 R	R		
Calcium	1457	1394	2510	1907	3415	4431	3337	2112	2394	1590		
Magnesium	1009	1038	1973	1821	2424	3983	3575	1508	1863	1142		
Potassium	972	713	1451	1668	989	1626	1753	662	1047	769		
Sodium	715	732	941	875	1014	1032	906	977	1162	764		
Station No.	14	15	16	17	18	18	19	20	21	22		
Sample Station Location	SWAMP AREA 2700'S.S.W. OF SITE AT MOUTH OF DIVERGENT FORK OF B.R. BAYOU	2600'S.S.W. OF SITE AT MOUTH OF BRAIDED FORK OF B.R. BAYOU	2300'S.W. OF SITE, STAINED SOIL FROM BEAVER POND	2200'S.W. OF SITE FROM CHANNEL OF DIVERGENT FORK B.R. BAYOU	2800'S.W. OF SITE, SWAMP AREA BETWEEN BRAIDED FORK B.R. BAYOU 0-2'	2-4'	3000'S.W. OF SITE NEAR MOUTH DIVERGENT FORK B.R. BAYOU	3000'S.S.E. OF SITE NEAR MOUTH DIVERGENT FORK B.R. BAYOU	2500'S.E. OF SITE, NEAR MAIN CHANNEL OF B.R. BAYOU	10'N. OF MAIN CHANNEL IN CLEARING		

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2. Reference for East/West Division is the 96°W longitudinal line which bisects Region VI.

CASE NUMBER: 3874

SITE NAME/CODE: Petro Processors

LA 345

CONCENTRATIONS (ppm)

PARAMETER	EPA Sample Numbers										Ambient Background 1.	
	MF2230	MF2232	MF2233	MF2237	MF2238	MF5139	MF5149				Western U.S. 2.	Eastern U.S. 2.
Matrix Type	Soil	Soil	Soil	Soil	Soil	High	High				Soil	Soil
Aluminum	4525	6739	4502	5651	8797						58,000	33,000
Antimony	R	R	R	R	R						.47	.52
Arsenic	2.9 R	3.5 R	R	R	R						5.5	4.8
Barium	115	149	60	122	74						580	290
Beryllium	0.5	0.5	0.3	0.4	0.4						0.68	0.55
Cadmium				2.6							<1	<1
Chromium	8	11	6	8	11						41	33
Cobalt	5	5		7							7.1	5.9
Copper	11	10	5	13	10						21	13
Iron	6691	8966	5671	7981	7791						21,000	14,000
Lead	145	259	28	159	36						17	14
Manganese	252 R	296 R	236 R	346 R	242 R						380	260
Mercury		0.5									0.046	0.081
Nickel											15	11
Selenium	R	R	R	R	R						.23	.30
Silver	R	R	R	R	R						-	-
Thallium											9.1	7.7
Tin	28 R	33 R	24 R	21 R	25 R						.90	.96
Vanadium	12.4	14.6	10.6	13.8	14.1						70	43
Zinc	12	22	3	16	15						55	40
Cyanide	R	R	R	R	R							
Calcium	1222	1463	1065	1401	1263							
Magnesium	780	1031	712	881	987							
Potassium	689	655	386	490	680							
Sodium	680	647	683	553	539							
Station No.	23	23	23	24	24	03	22					
Sample Station Location	100' N. OF WELL P-19, 450' S. OF SITE 0-2'	DUPLICATE	2-4'	30' N. OF MAIN CHANNEL 0-2'	2-4'							

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2. Reference for East/West Division is the 96°W longitudinal line which bisects Region VI.

Table II: ORGANIC ANALYSIS SUMMARY

Site Name/Code Petro Processors LA345 Case Number 3874 Concentration ppb

Sample Station Number and Location			01	06	08	13	16	18	23	24	2-21 FIELD RINSATE BLANK	2-22 FIELD RINSATE BLANK	2-23 FIELD RINSATE BLANK	3-1 FIELD RINSATE BLANK	3-2 FIELD RINSATE BLANK
Compound	Scan No.	Fraction /Class													
EPA SAMPLE NUMBER			FB173	FB194	FB196	FB187	FB184	FB180	FB203	FB210	FB176	FB182	FB185	FB 00	FB209
MATRIX			Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
di-n-butyl phthalate		ABN/1	2 JB	2 JB	2 JB	1JB	4JB		2 JB	6 JB				4 JB	3 JB
di-n-octyl phthalate		ABN/1	2 J												
acetone		VOA/2							17		7J	9J	9J	48	75
methylene chloride		VOA/1											7B	23B	
hexachloro butadiene		ABN/1			62				20	7J					
diethyl phthalate		ABN/1			1J										
hexachloro benzene		ABN/1			9J				6J	3J					
bis-(2-ethyl hexyl) phthalate		ABN/1								2J					
5-methyl-2-hexane	352	ABN, -3	81	84		84	22	51			P	29	P		
trichloro ethene	205	ABN-3				63					61				
unknown	329	ABN-3			130				110	19				100	99
cy[illegible]hexanol isomer	364	ABN-3		P	16	P			17	12				25	18
cy[illegible]hexenone isomer	421	ABN-3			24	P	P		33	27				29	25
unknown	559	ABN-3			19				P	11				11	15
unknown	540	ABN-3			P				P	P				13	P

1. Priority Pollutant.
2. Specif ed Hazardous Substance.
3. Tentatively Identified.

VOA - Volatile
ABN - Acid Base/Neutral
Pest - Pesticide

B - The analyte is found in the lab blank.
J - Indicates an estimated value for tentatively identified compounds or for compounds found below detection limit.
P - Present in sample, but not reported by lab.

Table II: ORGANIC ANALYSIS SUMMARY

Site Name/Code Petro Processors LA 345 Case Number 3874 Concentration ppb

Sample Station Number and Location	Scan No.	Fraction /Class	01 450'SSW OF SITE BETWEEN DIVERGENT FORKS OF B.R. BAYOU 0-2'	01 450'SSW OF SITE BETWEEN DIVERGENT FORKS OF B.R. BAYOU 2-4'	02 450'S.E. OF SITE LOW AREA BETWEEN DIVERGENT FORKS OF B.R. BAYOU 0-18"	02 450'S.E. OF SITE LOW AREA BETWEEN DIVERGENT FORKS OF B.R. BAYOU DUP.	03 750'S. OF SITE FROM SWALE JUST W. OF BRAIRD FORK OF B.R. BAYOU 0-18"	04 750'S.S.W. OF SITE DIVERGENT FORK OF B.R. BAYOU	04 DUP	05 1000'S. OF SITE 0-2'	05 2-4'	06 1300'S.E. OF SITE ALONG LOW AREA BETWEEN B.R. BAYOU & BRIDGE 0-2'	06 DUP	06 2-4'	07 1250'S.E. OF SITE CHANNEL OF DIVERGENT FORK B.R. BAYOU
EPA SAMPLE NUMBER			FB172	FB171	FB174	FB175	FB181	FB167	FB166	FB204	FB205	FB190	FB192	FB193	FB066
MATRIX			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Methylene chloride		VOA-1	9.6B	6.1JB	6.8B	5.5JB	1600B	12B	6.5B	94B	110B	84B	120B	110B	18B
1,3-dichloro benzene		ABN-1										25J	37J		
1,4-dichloro benzene		ABN-1													620J
Hexachlorobutadiene		ABN-1			460	1300J	300,000			140J					4400
Bis (2-ethyl hexyl) phthalate		ABN-1										44J	71J	57J	
Hexa chloro benzene		ABN-1			5600	12,000				250		110J	200		11,000
1,1,2-Trichloro ethane	222,184,202	ABN-3								100B		100B	200B	200B	
1,1,2,2-Trichloro ethane	429,442	ABN-3								400B	300B	400B	400B	400B	
Styrene	393	ABN-3			180							P	100		1000
Unknown	1607	ABN-3													
Unknown	1824	ABN-3													
Acetone		VOA-2	6.6JB	20B	18B		1800B		7.1JB						
Cyclo hexanone	408	ABN-3								200B	90B				
Methyl cyclohexane	151	ABN-3										80	90		
Unknown	1580	ABN-3											200		
Alkane	1928	ABN-3											200	90	
Alkane	1842	ABN-3												100	
1,2-TRANS dichloro ethene		VOA-1					2300								
Trichloro ethene		VOA-1					1300								
Phenanthrene		ABN													460J
N-Nitroso diphenyl amine		ABN							420						
Alkane	706	ABN-3													1000
Unknown	730	ABN-3													2200
Unknown	863	ABN-3													1300
Unknown	948	ABN-3													820
Unknown	992	ABN-3													580
Unknown	1000	ABN-3													1200
Unknown	1093	ABN-3													1300
Unknown	1166	ABN-3													380
Alkane	1185	ABN-3													760
Unknown	1213	ABN-3						740							1300
Alkane	1319	ABN-3													790
Alkene or alcohol	1328	ABN-3													2500
Alkene or alcohol	1355	ABN-3													1700
Unknown	1498	ABN-3													2800
Unknown	1332	ABN-3							1200						
Alkane	241	ABN-3							580						
Alkane	1055	ABN-3	2700												
Alkane	1120	ABN-3	1100												
Tetra chloro ethene	299	ABN-3		230											
Unknown	973	ABN-3			290										
Unknown	1189	ABN-3			200										
Alkane	1197	ABN-3			200										
Alkane	1235	ABN-3			200										
Unknown	1264	ABN-3			170										
Alkane	1336	ABN-3			340										

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Table II: ORGANIC ANALYSIS SUMMARY

Site Name/Code Petro Processors LA345 Case Number 3874 Concentration ppb Page 1 of 7

Sample Station Number and Location			01	01	02	02	03	04	04	05	05	06	06	06	07
Compound	Scan No.	Fraction /Class	0-2'	2-4'	0-18"	DUP	0-18"		DUP	0-2'	2-4'	0-2'	DUP	2-4'	
EPA SAMPLE NUMBER			FB172	FB171	FB174	FB175	FB181	FB167	FB166	FB204	FB205	FB190	FB192	FB193	FB066
MATRIX			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Toluene	237	ABN-3	1400B	2200B	610	1200B									
Alcohol	262	ABN-3	400	430	280										
Alkene	276	ABN-3	720B	1000B	630										
Ketone	287	ABN-3	1100B	1400B	360										
Alkane	301	ABN-3	680	400											
Alkane	307	ABN-3	2300	3300	2600	2700									
Alkane	313	ABN-3	1200	1600	1400	1300									
Alkane	319	ABN-3	3500	4800	3400	1300									
Ketone	B 326	ABN-3	6400B	8800B	820 B	5300 B									
Xylene	350	ABN-3	210	260											
Unknown	445	ABN-3		470											
Unknown	550	ABN-3		360											
Unknown	983	ABN-3		1700											
Unknown	1113	ABN-3		1700											
Unknown	1135	ABN-3		2600											
Chloro alkene	272	VOA-3					3600								
Chloro Alkene	403	VOA-3					6800								
Unknown - chlorinated	514	VOA-3					6800								
Unknown	531	VOA-3					1600								
Chlorinated Alkene	544	VOA-3					49,000								
Chlorinated unknown	555	VOA-3					3600								
Chlorinated unknown	606	VOA-3					23,000								
Chlorinated unknown	627	VOA-3					75,000								
Chlorinated alkene	651	VOA-3					9,000								
Chlorinated unknown	684	VOA-3					14,000								
Tetrachloro butadiene	539	VOA-3													33
Hexane	373	VOA-3							6.5						
Alkene	218 238	ABN-3						390 B	590 B						960 B
Ketone	337 314	ABN-3						1500 B	1200 B						2300 B
Unknown	411	ABN-3													1700
C-T benzene	486	ABN-3													990
Alkane	655	ABN-3													1100

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Table II: ORGANIC ANALYSIS SUMMARY

Site Name/Code Petro Processors LA345 Case Number 3874 Concentration ppb

Sample Station Number and Location / Compound	Scan No.	Fraction /Class	08 1300'SSE OF SITE ALNG LOW AREA BETWEEN DIVERGENT FORK B.R. BAYOU	09 2900'S.S.E OF SITE CHANNEL OF DIVERGENT FORK B.R.BAYOU	10 LOW AREA W.OF BRAIDED FORK OF B.R BAYOU 2000'S.OF SITE 0-2'	10 2-4'	11 1700'S.S.W. OF SITE DIVERGENT FORK OF B.R.BAYOU	13 2300'SSW OF SITE SWAMP AREA AT MOUTH OF BRAIDED FORK B.R. BAYOU 0-2'	13 2-4'	14 2700'SSW OF SITE AT MOUTH OF DIVERGENT FORK OF B.R.BAYOU	15 S.W. OF SITE SWAMP AREA AT MOUTH OF BRAIDED FORK B.R. BAYOU	16 2300'S.W.OF SITE STAINED SOIL FROM BEAVER DAM W/IN CLEARED AREA 0-2'	17 2200'S.W. OF SITE CHANNEL OF DIVERGENT FORK OF B.R. BAYOU	18 2800'S.W.OF SITE FROM SWAMP AREA BETWEEN BRAIDED FORK OF B.R. BAYOU 0-2'	18 2-4'
EPA SAMPLE NUMBER			FB195	FB162	FB197	FB198	FB165	FB186	FB188	FB168	FB169	FB183	FB170	FB177	FB178
MATRIX			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Methylene chloride		VOA-1	62 B	460J B	120 B	44 B	7.3 B	120 B	540 B	5.4 JB	5.1 JB	96 B	6.5 JB	8.0 B	6.2 JB
Benzene		VOA-1						8 JB				7 JB			
1,3-dichloro benzene		ABN-1						250							
1,4-dichloro benzene		ABN-1						110 J							
1,2,4-trichloro benzene		ABN-1						57 J							
Hexachloro butadiene		ABN-1	8900	130,000				170J							
Bis (2-ethyl hexyl) phthalate		ABN-1						77J	63J	1900			4300		
Hexa chloro benzene		ABN-1	35,000	49,000	180J	40J	200J								
1,1,2-Trichloro ethane	184, 202	ABN-3						300B	300B			90B			
1,1,2,2,-Trichloro ethane	429,442	ABN-3			300B	200B		500B	500B			200B			
Sulfur	1420	ABN-3							200			1000			
Phthalate, possibly diiso oct	1998	ABN-3										200			
Alkane	1957	ABN-3										200			
Styrene	381 393	ABN-3	2,000					400							
Aromatic	461	ABN-3						90							
Methyl ethenyl benzene	528	ABN-3	2,000					200							
Unknown PNA	1120	ABN-3						200							
Alkane	1186	ABN-3						100							
Unknown	1199	ABN-3						100							
Unknown	1298	ABN-3						100							
Unknown	1358	ABN-3						80							
Unknown	1374	ABN-3						100							
Unknown	1422	ABN-3						200							
Unknown	1448 1471	ABN-3	4000					200							
Unknown	1587	ABN-3						400							
Unknown	1709	ABN-3						400							
Unknown	1913	ABN-3						100							
Unknown + alkane	1954	ABN-3						100							
Unknown	1982	ABN-3						200							
Unknown	1607	ABN-3							90						
Unknown	1824	ABn-3							300						
Unknown	1902	ABN-3							400						
Hexachloro butadiene	848	VOA-3	300												
Acetone		VOA-2		3800 B						50 B	28 B		63 B	40 B	42 B
Cyclohexanone	399,408	ABN-3				100 B									
Penta chloro benzene	1038	ABN-3	6000												
Octa chloro styrene	1399	ABN-3	1000												
Di-n-butyl phthalate		ABN-1								330J			710		
Butyl benzyl phthalate		ABN-1								290J			610		
Phenanthrene		ABN-1											350J		
Chloro benzene		VOA-1		5641											
Alkane	973	ABN-3											520		
Alcohol	1035	ABN-3											938		
Alkane	1170	ABN-3											750		

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Table II: ORGANIC ANALYSIS SUMMARY

Site Name/Code Petro Processors LA345 Case Number 3874 Concentration ppb Page 5 of 7

Sample Station Number and Location			08	09	10	10	11	13	13	14	15	16	17	18	18
Compound	Scan No.	Fraction /Class			0-2'	2-4'		0-2'	2-4'					0-2'	2-4'
EPA SAMPLE NUMBER			FB195	FB162	FB197	FB198	FB165	FB186	FB188	FB168	FB169	FB183	FB170	FB177	FB178
MATRIX			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Toluene	257	ABN-3								580 B	1500 B		1300 B	2700 B	1900 B
Alcohol	262	ABN-3									550			530	450
Alkene	276	ABN-3								370 B	1200 B		1000B	1100B	1000B
Ketone	287	ABN-3								630B	1600B		1200B	2100B	1800B
Alkane	301	ABN-3									250			740	560
Alkane	307	ABN-3								240	2000		1500	3800	3800
Alkane	313	ABN-3								330	940		680	1800	1600
Alkane	319	ABN-3								980	2700		1900	5900	4700
Ketone	326	ABN-3								2700B	6900B		5800B	14,000B	9200B
Xylene	350	ABN-3												520	350
Unknown	445	ABN-3								240				1800	730
Unknown	550	ABN-3								170				1500	420
Unknown	654	ABN-3												730	
Unknown	733	ABN-3												550	
Unknown	739	ABN-3												1400	
Unknown	747	ABN-3												690	
Unknown	983	ABN-3								1200				5100	1700
Unknown	1113	ABN-3								1000	1600			1900	1100
Unknown	1135	ABN-3								1500				7300	2400
Unknown	1228	ABN-3								790			2000	1100	
Tetra chloro ethene	296	ABN-3													300
Unknown	1173	ABN-3													1200
Chloro alkene	272	VOA-3		2000											
Chloro alkene	403	VOA-3		25,000											
Unknown Chlorinated	514	VOA-3		11,000											
Chloro alkene	544	VOA-3		74,000											
Chlorinated unknown	555	VOA-3		P											
Chlorinated unknown	606	VOA-3		24,000											
Chlorinated unknown	627	VOA-3		60,000											
Chlorinated alkene	651	VOA-3		5,200											
Chlorinated alkene	684	VOA-3		3,780											
Chloro alkene	294	VOA-3		3500											
Unknown	393	VOA-3		2400											
Thiazole	611	ABN-3								280			670		
Alkane	804	ABN-3								300			1200		
Alkane	849	ABN-3								730			5100		
Alkane	894	ABN-3								340			3300		
Alkane	936	ABN-3								350			2400		
Unknown	1244	ABN-3								780	430				
Unknown	1787	ABN-3								1600			4300		
Unknown	1147	ABN-3									520				
Unknown	1163	ABN-3									630				
Dioxane	407	ABN-3											450		
Alkane	824	ABN-3											890		
Alane	897	ABN-3											1400		

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Table II: ORGANIC ANALYSIS SUMMARY

Site Name/Code _____ Case Number _____ Concentration ppb Page 6 of 7

Sample Station Number and Location / Compound	Scan No.	Fraction /Class	19 SEDIMENT FROM CHANNEL OF BRAIDED PART OF B.R. BAYOU, 3000' S.W. OF SITE	20 3000' SSE OF SITE NEAR MOUTH OF DIVERGENT FORK OF B.R. BAYOU	21 3500' SE OF SITE NEAR MAIN CHANNEL OF B.R. BAYOU	22 10' N. OF MAIN CHANNEL IN CLEARING 0-14"	23 950' S. OF SITE, 100' W. OF WELL P-19 0-2'	23 DUP.	23 2-4'	24 30's OF MAIN CHANNEL IN CLEARING 0-2'	24 2-4'				
EPA SAMPLE NUMBER			FB179	FB163	FB164	FB191	FB199	FB201	FB202	FB206	FB207				
MATRIX			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Methylene chloride		VOA/1		8.3B	11B	160B	61B	130B	49B	160B	130B				
1,3-dichlorobenzene		ABN/1			260J	1100J									
1,4-dichlorobenzene		ABN/1				1200J									
Hexachlorobutadiene		ABN/1		14,000	350J		91J	90J		1700J	45J				
Hexachlorobenzene		ABN/1		32,000	790	54,000	220	320		27,000	1200				
1,1,2-Trichloroethane	184202	ABN/3					200B	200B			100B				
1,1,2,2-Trichloroethane	429442	ABN/3					500B	500B	300B		500B				
Sulfur	1420	ABN/3			600										
Styrene	393	ABN/3		5000						4000					
Unknown	1471	ABN/3				300				1000					
Acetone		VOA/2	10JB	21B					100						
Cyclohexanone	408	ABN/3					200B	300B	100B						
Unknown	461	ABN/3					80	80							
Unknown	1673	ABN/3								1000					
Toluene	257	ABN/3	2000B		250										
Alkene	276	ABN/3	940B												
Ketone	287	ABN/3	2000B												
Alkane	301	ABN/3	940												
Alkane	307	ABN/3	3500												
Alkane	313	ABN/3	1600												
Alkane	319	ABN/3	4800												
Ketone	326	ABN/3	15,000B												
Xylene	350	ABN/3	620												
Unknown	550	ABN/3	1600												
Unknown	654	ABN/3	730												
Unknown	983	ABN/3	6600												
Unknown	1113	ABN/3	3600												
Unknown	1135	ABN/3	7000												
Tetra chloroethene	1228	VOA/3	1000												
Unknown	262	VOA/3	390												
Unknown	407	ABN/3	760												
Alkane	1312	ABN/3	1100												
Unknown	1737		4100												
Unknown	1752		990												
chlorobutadiene	539			45											
Unknown	620			33											
Alkene	238				500B										
Ketone	314				2000B										

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Table II: ORGANIC ANALYSIS SUMMARY

Site Name/Code Petro Processors LA345 Case Number _____ Concentration ppb Page 7 of 7

Sample Station Number and Location / Compound	Scan No.	Fraction /Class	19	20	21	22	23	23	23	24	24
EPA SAMPLE NUMBER			FB179	FB163	FB164	FB191	FB199	FB201	FB202	FB206	FB207
MATRIX			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unknown	948	ABN/3			530						
Unknown	992	ABN/3			690						
Unknonwn	1000	ABN/3			640						
Unknown	1093	ABN/3			360						
Alkane	1185	ABN/3			900						
Unknown	1213	ABN/3			960						
Alkene or Alcohol	1355	ABN/3			1800						
Alkene	1023	ABN/3		2100							
Unknown	1117	ABN/3		1900							
Unknown	1148	ABN/3		21,000							
Unknown	1283	ABN/3		5000							
Unknown	1332	ABN/3		5500							
Unknown	1344	ABN/3		4300							
Alkane	1360	ABN/3		6900							
Unknown	1371	ABN/3		1500							
Unknown	1385	ABN/3		2900							
Unknown	1467	ABN/3		3200							
Unknown	1593	ABN/3		10,000							
Unknown	945	ABN/3			760						
Unknown	975	ABN/3			1100						
Unknown	1010	ABN/3			480						
Alkane	1246	ABN/3			920						
Alkane	1325	ABN/3			900						
Unknown	1380	ABN/3			3300						
Unknown	1444	ABN/3			1500						
Unknown	1465	ABN/3			1900						
Unknown	1505	ABN/3			3200						

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TABLE 11. ORGANIC ANALYSIS SUMMARY

CASE NUMBER: 4386/SAS1575F

SITE NAME/CODE: Petro Processors/LA345

CONCENTRATIONS (ppm ~~ppb~~)

PARAMETERS			EPA SAMPLE NUMBERS								
Compound	Fraction	Class	F5139	F5149							
Methylene Chloride	VOA	1	8B	7B							
Acetone	VOA	2	12								
1, 1- Dichloro Ethene 1	VOA	1	26								
2 Butanone	VOA	2	48B	33B							
Trichloro Ethene 1	VOA	1	23								
Benzene 1	VOA	1	26								
Toluene 1	VOA	1	23								
Chloro Benzene 1	VOA	1	23								
Alkane 607	VOA	3	1J B	2J B							
Unknown 842	"	3	3J	2J							
Chlorinated cpd-c15 980	"	3	2J								
Unknown 1056	"	3	1J								
Chlorinated cpd, c15 - isomer of 980 1129	"	3	47J								
1,1,2-Trichloro--1,2,2-trifluoro ethane 393	"	3		3J B							
Alkane 940	"	3	P B	3J B							
Unknown = Siloxane 1006	BNA	3	30J								
" " 1179	"	3	30J								
Unknown 1735	"	3	1180JB								
Unknown 1683	"	3	1905 B	150JB							
Matrix Type			WATER	WATER							
Sample Station Number			03	22							
Sample Station Location			FROM BORE-HOLE, 750' S. OF SITE	FROM BORE-HOLE, 10' N. OF MAIN CHANNEL							

1. Priority Pollutant.
2. Specified Hazardous Substance.
3. Tentatively Identified.

B - The analyte is found in the lab blank.
J - Indicates an estimated value for tententatively identified compounds or for compounds found below detection limit.
P - Present in sample, but not reported by lab.

1/30/85

(1)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

3-2-85
(Date)

RECEIPT FOR SAMPLES

NAME AND TITLE OF EPA REPRESENTATIVE: Thomas N. Smith
FIT- Geologist
(Signature)

SAMPLES COLLECTED:

SAMPLE NUMBER	TIME	PLACE COLLECTED	TYPE	VOLUME	SPLIT SAMPLE REQUESTED	SPLIT SAMPLE PROVIDED
07	2-20-85 1058	Sediment, 1250' SE of site	Soil	24 oz	NO	NO
20	2-20-85 1225	Sediment, 3,000' SSE of site	Soil	24 oz	NO	NO
21	2-20-85 1225	Sediment, 2500' SE of site	Soil	24 oz	NO	NO
09	2-20-85 1435	Sediment, 2000' SSE of site	Soil	56 oz	yes	yes
11	2-20-85 1505	Sediment, 1700' SSW of site	Soil	56 oz	yes	yes
04	2-20-85 1530	Sediment, 750' SSW of site	Soil	80 oz	yes	yes
17	2-21-85 1005	Sediment, 2200' SW of site	Soil	56 oz	yes	yes
15	2-21-85 1045	Sediment, 2600' SW of site	Soil	56 oz	yes	yes
14	2-21-85 1120	Sediment, 2700' SSW of site	Soil	56 oz	yes	yes

ACKNOWLEDGEMENT OF FACILITY REPRESENTATIVE

The undersigned acknowledges that the samples described above have been collected.

NAME, TITLE AND ADDRESS OF FACILITY REPRESENTATIVE:

Dave Ewell, owner

(Signature)

3-2-85
(Date)

DISTRIBUTION: One copy facility representative
One copy for inspector's records
Original to Regional Office

(2)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

3-2-85
(Date)

RECEIPT FOR SAMPLES

NAME AND TITLE OF EPA REPRESENTATIVE: Thomas W. Smith
FIT - Geologist
(Signature)

SAMPLES COLLECTED:

SAMPLE NUMBER	TIME	PLACE COLLECTED	TYPE	VOLUME	SPLIT SAMPLE REQUESTED	SPLIT SAMPLE PROVIDED
02	2-21-85 1410	Auger-hole, 0"-18", 450' SE of site	soil	80 oz	yes	yes
01	2-21-85 1445	Auger-hole, 0'-4', 450' SSW of site	Soil	48 oz	No	No
01	2-21-85 1445	Auger-hole, 0'-4', 450' SSW of site	Water	2 gal	yes	yes
18	2-22-85 1055	Auger-hole, 0'-4', 2800' SW of site	Soil	48 oz	NO	NO
18	2-22-85 1135	Auger-hole, 0'-4', 2800' SW of site	Water	1½ gal	NO	NO
19	2-22-85 1215	Sediment, 3000' SW of site	Soil	56 oz	yes	yes
03	2-22-85 1540	Auger hole, 0"-18", 750' S of site	Soil	56 oz	yes	yes
03	2-22-85 1540	Auger-hole, 0"-18", 750' S of site	Water	8 oz	NO	NO
16	2-23-85 1110	Auger-hole, 0'-2', brown pond area	Soil	56 oz	yes	yes

ACKNOWLEDGEMENT OF FACILITY REPRESENTATIVE

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Dave Ewell, owner

(Signature)

3-2-85
(Date)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

3-2-85
(Date)

RECEIPT FOR SAMPLES

NAME AND TITLE OF EPA REPRESENTATIVE: Thomas N. Smith
FIT- Geologist
Thomas Smith
(Signature)

SAMPLES COLLECTED:

SAMPLE NUMBER	TIME	PLACE COLLECTED	TYPE	VOLUME	SPLIT SAMPLE REQUESTED	SPLIT SAMPLE PROVIDED
16	2-23-85 1120	Augr-hole, 0'-2', from beaver pond area	Water	1½ gal	NO	NO
13	2-23-85 1240-1255	Augr-hole, 0'-4', 2300' SSW of site	Soil	80 oz	yes	yes
13	2-23-85 1300	Augr-hole, 0'-4', 2300' SSW of site	Water	1½ gal	NO	NO
22	2-23-85 1504	Augr-hole, 0"-14", 10' N of channel	Soil	56 oz	yes	yes
22	2-23-85 1510	Augr-hole, 0"-14", 10' N of channel	Water	8 oz	NO	NO
06	2-23-85 1536-1550	Augr-hole, 0'-4', 1300' SE of site	Soil	104 oz	yes	yes
06	2-23-85 1610	Augr-hole, 0'-4', 1300' SE of site	Water	1½ gal	NO	NO
10	3-1-85 1213	Augr-hole, 0'-4', 2000 Ft SW of site	Soil	78 oz	NO	NO
08	3-1-85 1305	Augr-hole, 0'-2', 600' SE of site	Soil	56 oz	yes	yes

ACKNOWLEDGEMENT OF FACILITY REPRESENTATIVE

The undersigned acknowledges that the samples described above have been collected.

NAME, TITLE AND ADDRESS OF FACILITY REPRESENTATIVE:

Dave Ewell, owner

Dave Ewell
(Signature)

3-2-85
(Date)

DISTRIBUTION: One copy facility representative
One copy for inspector's records
Original to Regional Office

(4)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

3-2-85
(Date)

RECEIPT FOR SAMPLES

NAME AND TITLE OF EPA REPRESENTATIVE: Thomas N. Smith
FIT Geologist
(Signature)

SAMPLES COLLECTED:

SAMPLE NUMBER	TIME	PLACE COLLECTED	TYPE	VOLUME	SPLIT SAMPLE REQUESTED	SPLIT SAMPLE PROVIDED
08	3-1-85 1335	Augur hole, 0'-2', 1200' SSE of site	water	1½ gal	NO	NO
23	3-1-85 1615	Augur hole, 0'-4', 450' S of site	soil	10 oz	yes	yes
23	3-1-85 1645	Augur hole, 0'-4', 450' ft S of site	water	1½ gal	NO	NO
24	3-2-85 1015	Augur hole, 0'-4', 30' S of stream	soil	80 oz	yes	yes
24	3-2-85 1305	Augur hole, 0'-4', 30' S of stream	water	1½ gal	NO	NO
05	3-2-85 1320	Augur hole, 0'-4', 450' S of site	soil	48 oz	NO	NO

ACKNOWLEDGEMENT OF FACILITY REPRESENTATIVE

The undersigned acknowledges that the samples described above have been collected.

NAME, TITLE AND ADDRESS OF FACILITY REPRESENTATIVE:

Dave Ewell, owner

(Signature)

3-2-85
(Date)

DISTRIBUTION:
One copy facility representative
One copy for inspector's records
Original to Regional Office

REFERENCE 11

Ref II

MITRE

26 May 1988
[illegible]

Ms. Lucy Sibold
U.S. Environmental Protection Agency
401 M Street, S.W.
Room 2636, Mail Code WH-548A
Washington, D.C. 20460

Dear Ms. Sibold:

Enclosed is a copy of the draft revised HRS net precipitation values for 3,345 weather stations where data were available. The data are presented by state code, station name, latitude, longitude, and net precipitation in inches. A list of state codes is also enclosed.

The net precipitation values are provided to assist the Phase II - Field Testing efforts. It is suggested that the value from the nearest weather station in a similar geographic setting be used as the net precipitation value for a site.

If there are any questions regarding this material, please contact Dave Egan at (703) 883-7866.

Sincerely,

Andrew M. Platt
Group Leader
Hazardous Waste Systems

AMP:DEE/hme

Enclosures

cc: Scott Parrish

The MITRE Corporation
Civil Systems Division
7525 Colshire Drive, McLean, Virginia 22102-3481
Telephone (703) 883-6000 Telex 248923

FIELD NAME	FIELD DEFINITION
STATE-NUMBER	Characters 1-2 Cooperative State Code for each State. STATE CODE LISTING 01 Alabama — 28 New Jersey 02 Arizona — 29 New Mexico 03 Arkansas — 30 New York 04 California — 31 North Carolina 05 Colorado — 32 North Dakota 06 Connecticut — 33 Ohio 07 Delaware — 34 Oklahoma 08 Florida — 35 Oregon 09 Georgia — 36 Pennsylvania 10 Idaho — 37 Rhode Island 11 Illinois — 38 South Carolina 12 Indiana — 39 South Dakota 13 Iowa — 40 Tennessee 14 Kansas — 41 Texas 15 Kentucky — 42 Utah 16 Louisiana — 43 Vermont 17 Maine — 44 Virginia 18 Maryland — 45 Washington 19 Massachusetts — 46 West Virginia 20 Michigan — 47 Wisconsin 21 Minnesota — 48 Wyoming 22 Mississippi — 49 Not Used 23 Missouri — 50 Alaska 24 Montana — 51 Hawaii 25 Nebraska — 66 Puerto Rico 26 Nevada — 67 Virgin Islands 27 New Hampshire — 91 Pacific Islands
STATION-NUMBER	Characters 3-6 Cooperative Station Number Range = 0001-9999.
DATA-CODE	Character 7 Data Indicator Code 1 = Maximum Mean Temperature 2 = Minimum Mean Temperature 3 = Average (Mean) Temperature 4 = Heating Degree Days 5 = Cooling Degree Days 6 = Precipitation (1951-80 Normals only)

[redacted]

OBS	STATE	NAME		LATNUM	LONNUM	NETPREC
1101	16	GRAND COTEAU		30.26	92.02	22.3867
1102	16	COVINGTON 4 NNW		30.32	90.07	23.8247
1103	16	HAMMOND 3 NW		30.32	90.29	26.8570
1104	16	BATON ROUGE WSO	R	30.32	91.08	20.1282
1105	16	MELVILLE		30.41	91.45	22.3342
1106	16	AMITE		30.43	90.30	26.9962
1107	16	BOGALUSA		30.47	89.52	24.1599
1108	16	ELIZABETH		30.52	92.48	26.3992
1109	16	BUNKIE		30.57	92.10	27.3214
1110	16	LEESVILLE		31.09	93.16	22.0341
1111	16	ALEXANDRIA		31.19	92.28	24.2674
1112	16	BELAH FIRE TOWER		31.38	92.11	26.4149
1113	16	NATCHITOCHES		31.46	93.05	20.9529
1114	16	OLLA 3 SSW		31.52	92.16	26.3273
1115	16	WINNFIELD 2 W		31.56	92.41	23.8727
1116	16	SAINT JOSEPH EXP STA		31.57	91.14	24.7117
1117	16	LOGANSPORT 4 ENE		31.59	93.57	20.1961
1118	16	WINNSBORO		32.09	91.42	24.2368
1119	16	TALLULAH 2 SW		32.24	91.13	25.2981
1120	16	SHREVEPORT WSO	R	32.28	93.49	16.6642
1121	16	MONROE FAA AIRPORT		32.31	92.03	21.6628
1122	16	CALHOUN EXP STATION		32.31	92.20	22.3810
1123	16	RUSTON LA POLYTECH INS		32.31	92.39	23.4018
1124	16	MINDEN		32.36	93.18	20.2617
1125	16	HOMER EXP STATION		32.45	93.04	21.7412
1126	16	BASTROP		32.47	91.54	23.2370
1127	16	LAKE PROVIDENCE		32.49	91.12	25.6024
1128	16	COTTON VALLEY		32.49	93.25	21.3857
1129	16	PLAIN DEALING		32.54	93.41	20.9866
1130	17	PORTLAND WSO	//R	43.39	70.19	25.6420
1131	17	LEWISTON		44.06	70.14	26.3577
1132	17	GARDINER		44.13	69.47	25.3548
1133	17	AUGUSTA FAA AIRPORT		44.19	69.48	23.4279
1134	17	BAR HARBOR		44.23	68.12	32.5261
1135	17	BELFAST		44.24	69.00	29.7955
1136	17	RUMFORD 1 SSE		44.32	70.32	23.9090
1137	17	WATERVILLE PUMP STA		44.33	69.39	22.1899
1138	17	JONESBORO		44.39	67.39	31.1300
1139	17	FARMINGTON		44.41	70.09	26.3940
1140	17	BANGOR FAA AP		44.48	68.49	23.1465
1141	17	MADISON		44.48	69.53	21.2056
1142	17	EASTPORT	R	44.55	67.00	25.5849
1143	17	CORINNA		44.57	69.13	24.0225
1144	17	WOODLAND		45.09	67.24	27.6710
1145	17	RIPOGENUS DAM		45.53	69.11	19.8047
1146	17	HOULTON FAA AP		46.08	67.47	20.0847
1147	17	HOULTON		46.08	67.50	19.5627
1148	17	PRESQUE ISLE		46.39	68.00	17.1429
1149	17	CARIBOU WSO	//R	46.52	68.01	18.0141
1150	18	CRISFIELD SOMERS COVE		37.59	75.52	16.0542
1151	18	POCOMOKE CITY		38.04	75.33	18.2727
1152	18	PRINCESS ANNE		38.13	75.41	18.3406
1153	18	SNOW HILL 4 N		38.14	75.23	19.6273
1154	18	SOLOMONS		38.19	76.27	16.3734
1155	18	SALISBURY FAA AIRPORT		38.20	75.30	18.7381

REFERENCE 12

Ref 12

Water Resources Data Louisiana

Water Year 1990

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT LA-90-1

Prepared in cooperation with the Louisiana Department of Transportation and Development and with other State and Federal agencies

07373420 MISSISSIPPI RIVER NEAR ST. FRANCISVILLE, LA
(National stream-quality accounting network station)

LOCATION.--Lat 30°45'30", long 91°23'45", in lot 31, T.3 S., R.11 E., Pointe Coupee-West Feliciana Parish line, Hydrologic Unit 08070100, at State Highway 10 Ferry Crossing, 2.0 mi southwest of St. Francisville, and at mile 266.0.

DRAINAGE AREA.--1,125,300 mi², contributing.

PERIOD OF RECORD.--Water years 1954 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: August 1954 to September 1972, October 1974 to April 17, 1990 (discontinued).
WATER TEMPERATURES: August 1954 to September 1972, October 1974 to April 17, 1990 (discontinued).
SULFATE: October 1974 to September 1978.
CHLORIDE: October 1974 to April 17, 1990 (discontinued).
DISSOLVED SOLIDS: October 1978 to April 17, 1990 (discontinued).

REMARKS.--See records of daily discharge for Mississippi River at Tarbert Landing, MS (station 07295100). Corps of Engineers station 01100. Extremes for current year for specific conductances, chlorides, and dissolved solids and water temperatures are not published because the number of missing days of record exceeded 20 percent of the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 683 micromhos Oct. 16, 1955; minimum daily, 173 micromhos Apr. 15, 1955.
WATER TEMPERATURES: Maximum daily, 32.0 °C July 24, 1983; minimum daily, 1.0 °C Jan. 29, 30, 1961, Dec. 25, 1989
SULFATE: Maximum daily, 90 mg/L Oct. 14, 1957; minimum daily, 21 mg/L May 20, 1978.
CHLORIDE: Maximum daily, 63 mg/L July 5, 1977; minimum daily, 7.2 mg/L Nov. 2, 1984.
DISSOLVED SOLIDS: Maximum, 321 mg/L Jan. 21-31, 1981; minimum, 125 mg/L Mar. 1-10, 1989.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DISCHARGE, IN CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (NTU)	SETTLEABLE MATTER (ML/L/HR)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
OCT												
06...	1230	375000	375	7.75	21.5	15	44	<1	7.8	0.5	26	900
DEC												
01...	1330	373000	326	7.85	11.0	15	39	<1	10.5	1.8	30	1800
21...	1415	230000	355	7.86	4.0	5	18	<1	12.8	3.6	25	680
JAN												
08...	1100	267000	318	7.68	5.5	20	77	<1	13.0	4.6	30	860
FEB												
20...	1130	995000	255	7.46	12.0	10	68	<1	10.4	2.6	36	1000
MAR												
05...	1015	1110000	252	7.46	10.5	20	55	<1	10.1	1.6	26	560
APR												
17...	1130	733000	355	7.82	15.0	15	37	<1	8.5	2.2	24	130
MAY												
01...	1030	740000	319	7.77	22.0	20	--	<1	8.2	1.4	21	120
JUN												
25...	1245	965000	317	7.51	28.0	30	62	<1	7.0	2.2	41	500
JUL												
17...	1100	506000	376	7.40	28.0	10	75	<1	6.4	1.2	27	K150
AUG												
14...	1045	354000	448	8.01	28.0	5	70	<1	6.8	0.6	29	K180
SEP												
17...	1130	315000	445	7.66	32.5	5	32	<1	7.2	1.0	19	100

AUG 580,250

< Actual value is known to be less than the value shown.
K Results based on colony count outside the acceptable range (non-ideal colony count).

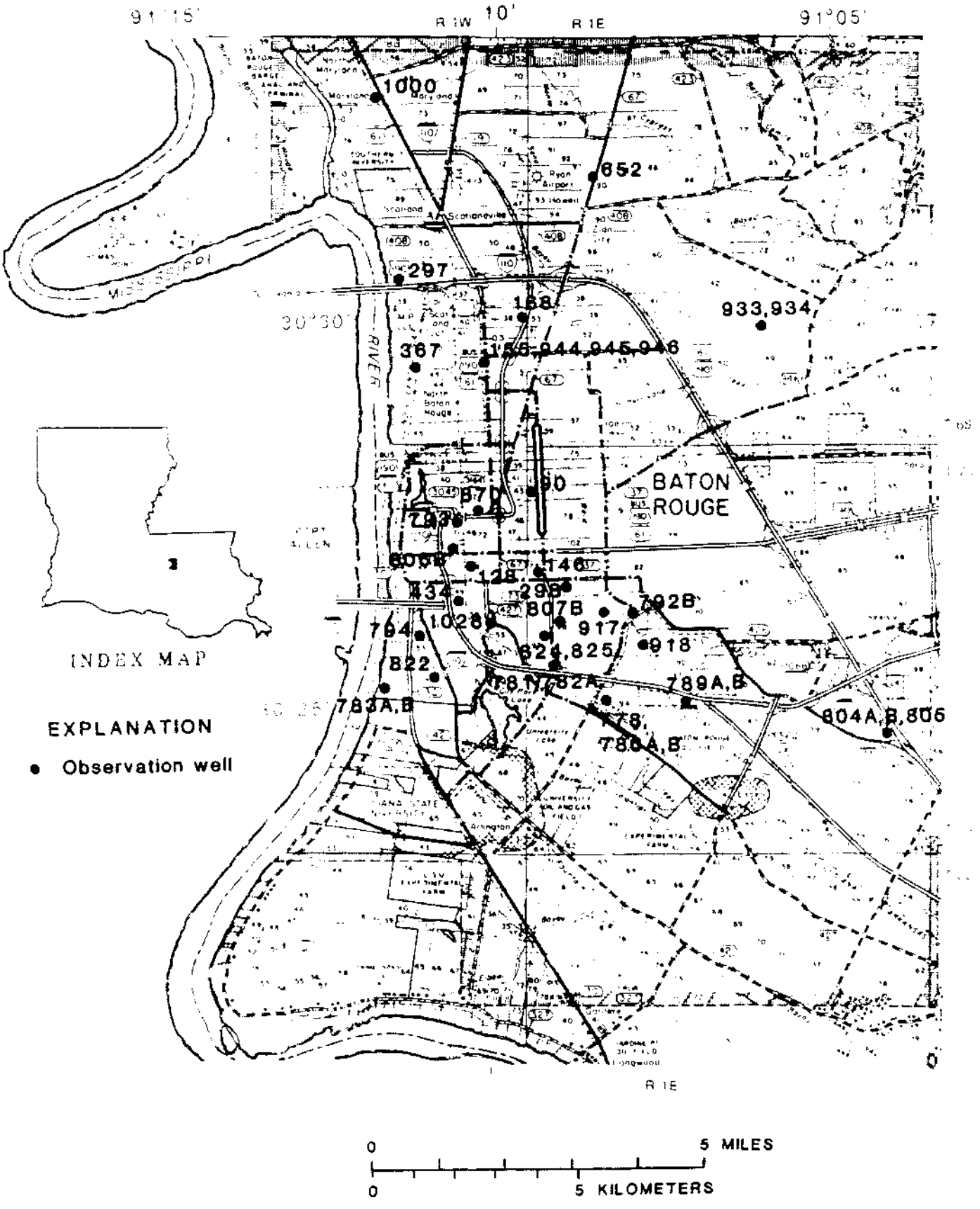


Figure 11.--Location of observation wells in shaded area of figure 10.

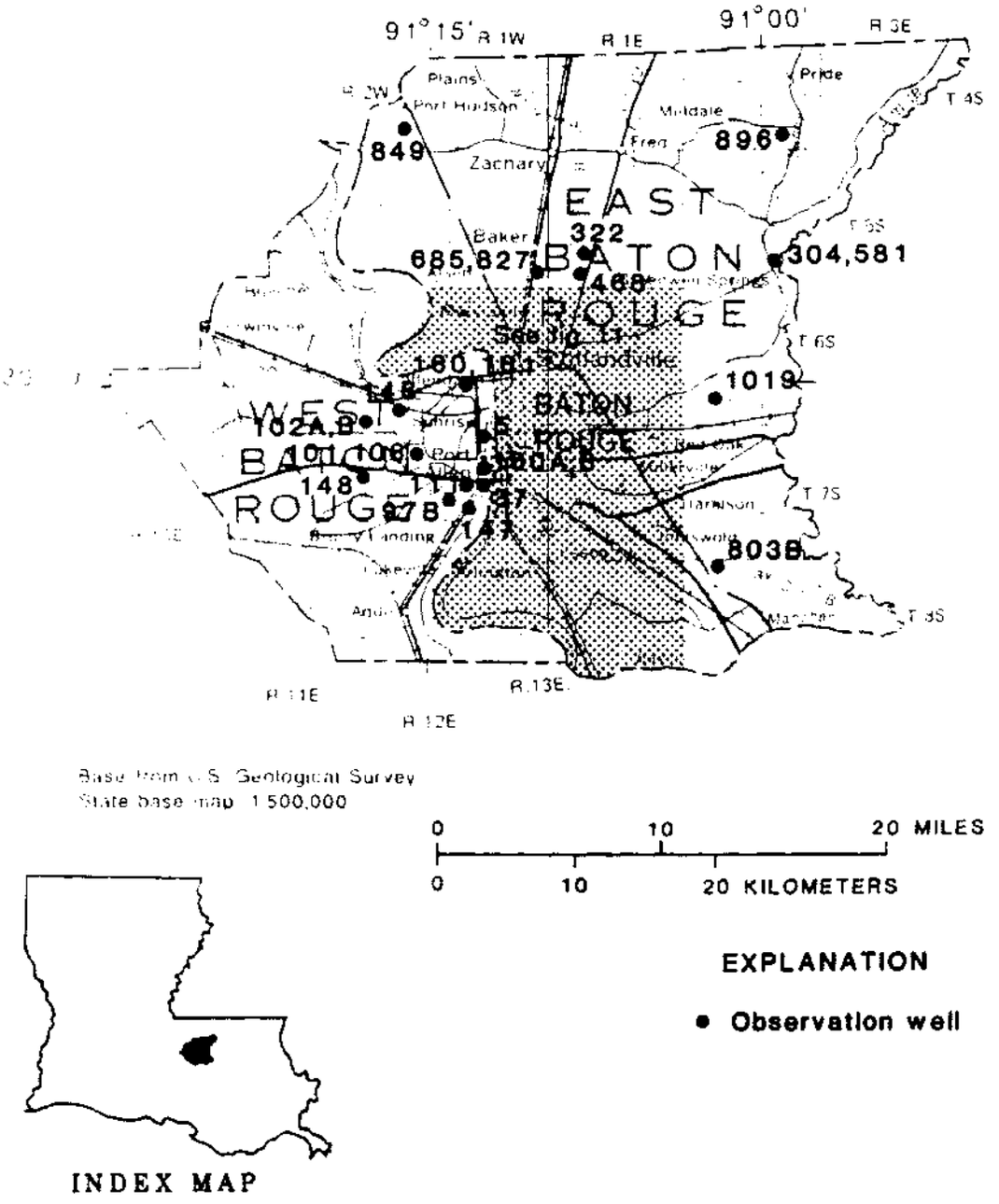


Figure 10.--Location of observation wells in East and West Baton Rouge Parishes.

REFERENCE 13

LOUISIANA
WATER QUALITY STANDARDS

Office of Water Resources
1984

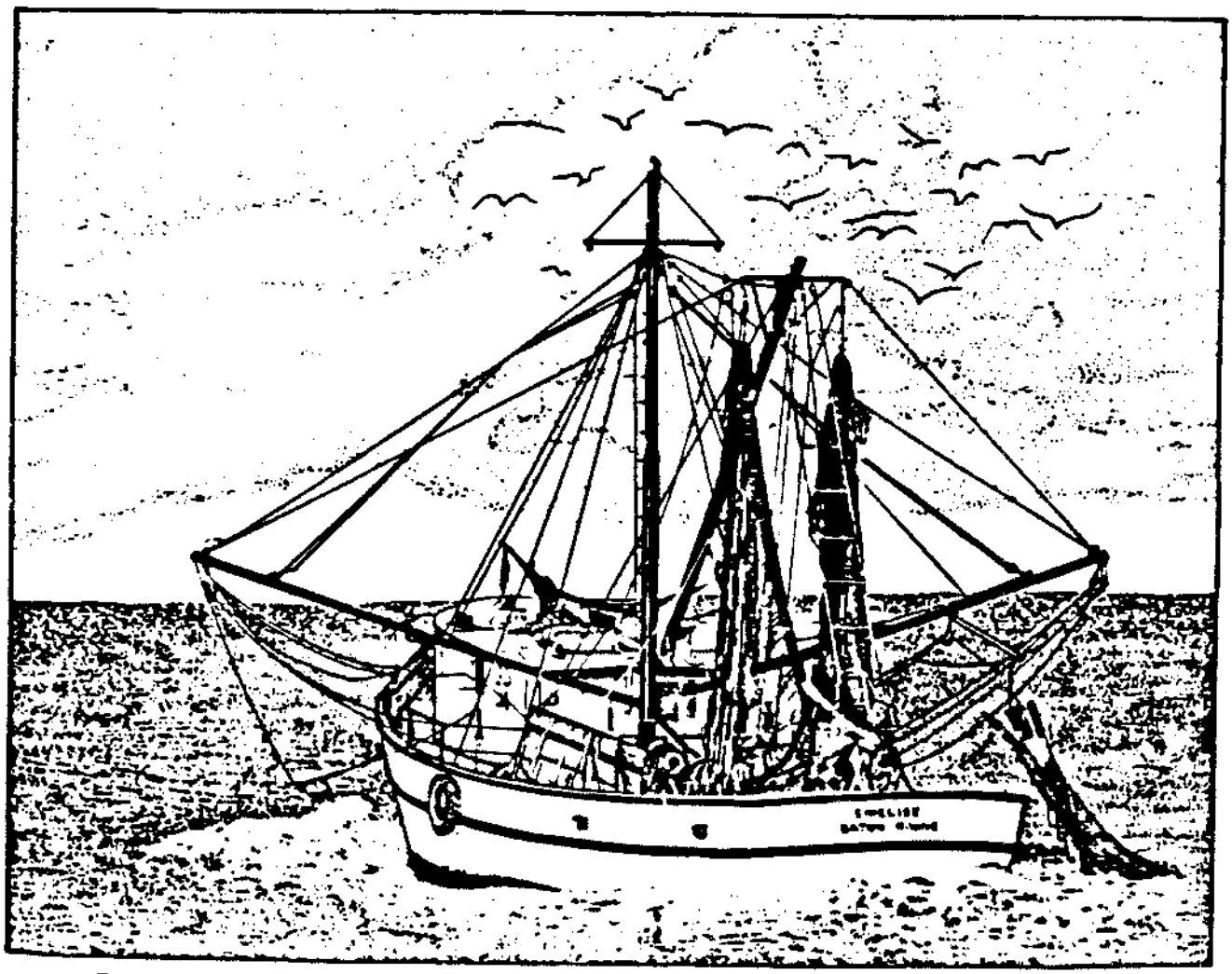


TABLE (07)
MISSISSIPPI RIVER BASIN

AGENCY ID	STREAM DESCRIPTION	NUMERICAL CRITERIA Cl	SO_4	DO	pH range	BAC	TEMP	TDS
0010	Mississippi River: From Arkansas State Line to Old River Control Structure	75	120	5.0	6.5-9.0	1	32	400
0020	Mississippi River: From Old River Control Structure to Monte Sano Bayou	75	120	5.0	6.5-9.0	1	32	400
0030	Old River Lake or Raccourci Lake	100	75	5.0	6.0-8.5	1	32	500
0040	Bayou Sara: Mississippi State Line to Mississippi River Confluence (Scenic)	100	75	5.0	6.0-8.5	1	32	500
0050	Thompson Creek: Mississippi State Line to Mississippi River Confluence	100	75	5.0	6.0-8.5	1	32	500
0060	Mississippi River: From Monte Sano Bayou to Head of Passes	75	120	5.0	6.5-9.0	1	32	400
0070	Mississippi River Passes: Head of Passes to Mouth of Passes (Estuarine) (Includes Southwest, South, North Passes and Pass a Loutre)	N/A	N/A	4.0	6.5-9.0	4	35	N/A
0080	Tiger Pass, Red Pass, Spanish Pass, Grand Pass, Tante Phine Pass (Estuarine)	N/A	N/A	4.0	6.5-9.0	4	35	N/A
0090	Octave Pass and Main Pass (Estuarine)	N/A	N/A	4.0	6.5-9.0	4	35	N/A
0100	Baptiste Collette Bayou (Estuarine)	N/A	N/A	4.0	6.5-9.0	4	35	N/A
0110	Mississippi River Basin Coastal Bays and Gulf Waters to State three-mile limit	N/A	N/A	5.0	6.5-9.0	4	32	N/A

TABLE (07)
MISSISSIPPI RIVER BASIN

AGENCY ID	STREAM DESCRIPTION	DESIGNATED WATER USES A	B	C	D	E	F	G
0010	Mississippi River: From Arkansas State Line to Old River Control Structure	X	X	X				
0020	Mississippi River: From Old River Control Structure to Monte Sano Bayou	X	X	X				
0030	Old River Lake or Raccourci Lake	X	X	X				
0040	Bayou Sara: Mississippi State Line to Mississippi River Confluence (Scenic)	X	X	X				X
0050	Thompson Creek: Mississippi State Line to Mississippi River Confluence	X	X	X				
0060	Mississippi River: From Monte Sano Bayou to Head of Passes	X	X	X	X			
0070	Mississippi River Passes: Head of Passes to Mouth of Passes (Estuarine) (Includes Southwest, South, North Passes and Pass a Loutre)	X	X	X		X		
0080	Tiger Pass, Red Pass, Spanish Pass, Grand Pass, Tante Phine Pass (Estuarine)	X	X	X		X		
0090	Octave Pass and Main Pass (Estuarine)	X	X	X		X		
0100	Baptiste Collette Bayou (Estuarine)	X	X	X		X		
0110	Mississippi River Basin Coastal Bays and Gulf Waters to State three-mile limit (Estuarine)	X	X	X		X		

REFERENCE 14

RECORD OF COMMUNICATION

Reference 14

TYPE: Discussion **DATE:** 5-3-89 **TIME:** 3:30 - 3:45 p.m.

TO: Ms. Cathy LeBlanc
Baton Rouge Water Company
Baton Rouge, Louisiana

FROM: Jeffrey E. Patterson
FIT Chemist, EPA Region VI
ICF Technology, Inc.
Dallas, Texas

SUBJECT: City of Baton Rouge Water Supply

SUMMARY OF COMMUNICATION:

Ms. LeBlanc provided information on the location, depth and pumpage of all the wells in the system. In a discussion with her and another employee of the waterworks, the following information was documented:

The service boundary for the Baton Rouge Water Company in the north is approximately Harding, Hooper and Mickens Streets. In the west, the boundary is the Mississippi River. The Red Oak area (southwest of the 4-mile radius) has a private and separate water system. Southern University and the airport each have at least one well. Other water systems in the area include the Parish Water Company, the Bakers System, Alsen System and the Port Allen System.

The Baton Rouge Water Company serves 84,000 connections both industrial and domestic, but primarily domestic. The current pumpage is approximately 50 million gallons per day.

They have a reservoir at Lula at North Thirty-First Street and one on Lafayette at North Boulevard.

The city has a fault line below it. Wells from north of this line provide water for the north and south side of town.

The waterworks personnel knew of no water supply intakes in the Mississippi River.

Parish Water Company 504-261-0104
Red Oak Water Company 504-275-4074
Louisiana Water Company 504-926-4081
Brusly, Town of 504-749-3744
Capital Utilities Corporation 504-387-1870

REFERENCE 15

RECORD OF COMMUNICATION

Reference 15

TYPE: Telephone Call **DATE:** 4-25-86 **TIME:** 10:00 a.m.

TO: Ken Naquine
Assistant Superintendent

FROM: Bernard Cousin
FIT Chemist
ICF Technology, Inc.

SUBJECT: Population Served by Surface Water

SUMMARY OF COMMUNICATION:

The FIT contacted the Baton Rouge Water Company to determine if surface water (i.e., Mississippi River) was used to supply the public in East Baton Rouge.

The reply we received was that no public water supplies are taken from surface water.

REFERENCE 16

U ited States Department c he Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

OCT 18 1983

ER-83/1164

Mr. Gene Lucero, Director
Office of Waste Programs Enforcement
Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Lucero:

In response to your request of September 15, 1983, we have conducted a preliminary natural resources survey of the Petro-Processors Site, Scotlandville, East Baton Rouge Parish, Louisiana, to determine whether the Secretary of the Interior's trust responsibilities for natural resources are involved.

We find that neither releases from the site nor the site itself affect any lands, minerals, waters or Indian resources that are managed by this Department. Due to the high probability of waterborne hazardous releases from the site there is a potential for damages to important wetland habitat located adjacent to and downstream from the site. This habitat is utilized by migratory birds which frequent the nearby streams, ponds and wetlands. The potential for adverse impacts to these migratory birds is present. However, based on our preliminary survey, there is insufficient information or analysis to document whether there have been any direct or indirect damages to these migratory birds.

Accordingly, at this time, we are not able to document any damages to natural resources under the trusteeship of the Secretary of the Interior that are or have been (since December 11, 1980) affected by hazards from the Petro-Processors site. However, in the future if sufficient information or analysis documents any damages to migratory birds, a claim for damages could be initiated.

This letter constitutes our report pursuant to our MOU with you on preliminary natural resources surveys.

Sincerely,

Bruce Blanchard, Director
Environmental Project Review

REFERENCE 17

Regular Session, 1991

HOUSE CONCURRENT RESOLUTION NO. 17

BY REPRESENTATIVE HOLDEN AND SENATOR CROSS

A CONCURRENT RESOLUTION

To urge and request the U.S. Department of Environmental Protection to conduct a preliminary assessment of suspected releases of hazardous substances, pollutants, and contaminants in Bayou Baton Rouge, Devil's Swamp, and Devil's Swamp Lake in East Baton Rouge Parish and designate the same as a "Superfund Site".

ORIGINATED

IN THE

House of Representatives

Regular Session, 1991

HOUSE CONCURRENT RESOLUTION NO. 17

BY REPRESENTATIVE HOLDEN AND SENATOR CROSS

A CONCURRENT RESOLUTION

To urge and request the U.S. Department of Environmental Protection to conduct a preliminary assessment of suspected releases of hazardous substances, pollutants, and contaminants in Bayou Baton Rouge, Devil's Swamp, and Devil's Swamp Lake in East Baton Rouge Parish and designate the same as a "Superfund Site".

WHEREAS, in the parish of East Baton Rouge, state of Louisiana, Bayou Baton Rouge, from its intersection with U.S. Highway 61 (Scenic Highway) to the Mississippi River, including Devil's Swamp and Devil's Swamp Lake, is suspected of being so heavily contaminated with toxic and hazardous waste that it should be investigated and designated by the U.S. Environmental Protection Agency as a "Superfund Site"; and

WHEREAS, hazardous waste from petro processors disposal sites along Bayou Baton Rouge have migrated into Devil's Swamp; and

WHEREAS, other industries and operations have discharged industrial and landfill wastewaters into Baton Rouge Bayou and Devil's Swamp which is believed to have significantly contributed to the contamination of those areas; and

WHEREAS, the toxic and hazardous waste contaminants have killed the cyprus trees, willows, and swamp vegetation, and contaminated and killed the aquatic and wildlife of the bayou and the swamp; and

H.C.R. NO. 17

WHEREAS, some of the contaminants such as chlorinated waste and hexachlorobutadiene have been found as deep as 45 feet below the surface in concentrations as high as 723,000 and 93,000 parts per million, respectively; and

WHEREAS, the contamination is a direct and serious threat to the health and safety of the residents who live in the communities, farms, and neighborhoods close to the contaminated areas and to those who hunt and fish in the Devil's Swamp and Baton Rouge Bayou areas.

THEREFORE, BE IT RESOLVED that the Legislature of Louisiana does hereby urge and request the U.S. Department of Environmental Protection to conduct a preliminary assessment of suspected releases of hazardous substances, pollutants, and contaminants in Bayou Baton Rouge, Devil's Swamp, and Devil's Swamp Lake in East Baton Rouge Parish and designate the same as a "Superfund Site".

BE IT FURTHER RESOLVED that a copy of this Resolution be sent to the regional administrator for Region VI of the U.S. Environmental Protection Agency, the secretary of the Department of Environmental Quality, the Louisiana congressional delegation, and secretary of the U.S. Environmental Protection Agency.

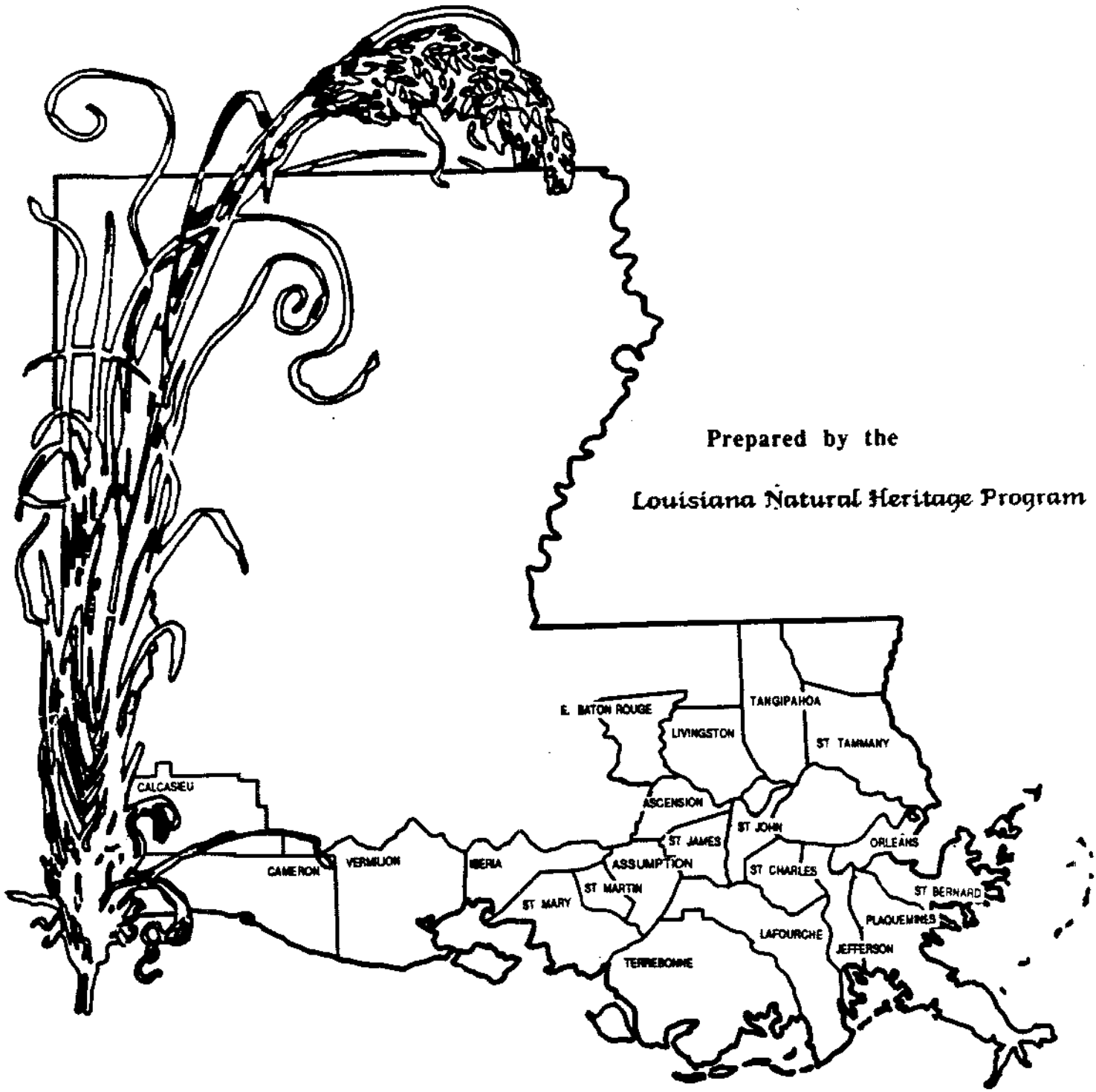
SPEAKER OF THE HOUSE OF REPRESENTATIVES

PRESIDENT OF THE SENATE

REFERENCE 18

PLANTS AND ANIMALS OF SPECIAL CONCERN

IN THE LOUISIANA COASTAL ZONE



Prepared by the

Louisiana Natural Heritage Program

Scaphirhynchus albus
Pallid Sturgeon
Rank=G2?S1

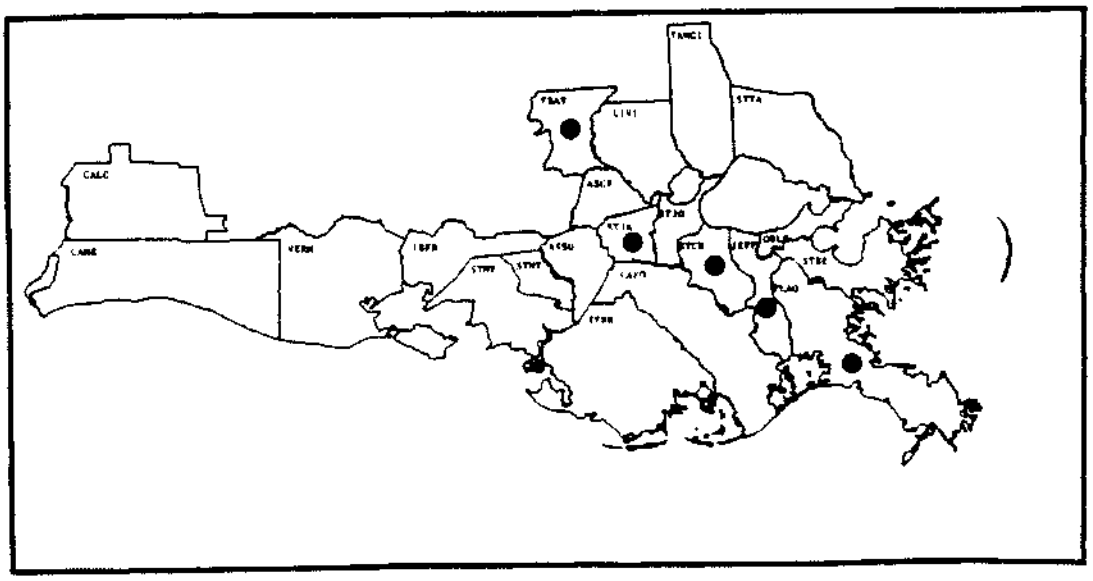
Description: Species in the genus *Scaphirhynchus* can be separated from the previous species by the absence of spiracles, the presence of a caudal filament on the dorsal lobe, and the complete covering of the caudal peduncle with bony plates. *Scaphirhynchus albus* can be further separated from the more common *S. platorynchus* (shovelnose sturgeon) on the basis of the largely naked belly, the inner barbel less than two-thirds the length of the outer barbel, and the eye less than the diameter of the anterior nostril in young. The few specimens collected in Louisiana were juveniles weighing less than 1.4 kg; however, individuals are known to attain a weight of 31.8 kg and a total length of 1.1 m.

The pallid sturgeon is one of the most poorly known and infrequently recorded freshwater fishes in North America. The species apparently prefers the main channels of excessively turbid rivers in areas with strong currents over firm sandy bottoms. Aquatic insects and small fishes comprise a majority of the diet.

Associated Natural Communities: Riverine: Lower Perennial Open Water.

Distribution: Almost entirely restricted to the Missouri and lower Mississippi Rivers. In Louisiana, specimens have been collected from the Mississippi River between Lake Providence, East Carroll Parish and New Orleans. There is 1 record away from the main channel of the Mississippi: 1 collected from Little Bayou Pierre, Grand Pass, St. Bernard Parish. A candidate for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

References: Douglas 1974, Hoese et al. 1977, Lee et al. 1980.



STATE ELEMENT RANKS:

S1 = Critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from the state.

S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.

S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences).

S4 = Apparently secure in state, with many occurrences.

S5 = Demonstrably secure in state and essentially ineradicable under present conditions.

SA = Accidental in state, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded; examples include European strays or western birds on the East Coast and vice-versa.

SH = Of historical occurrence in the state, perhaps having not been verified in the past 20 years, and suspected to be still extant. Naturally, an element would become SH without such a 20-year delay if the only known occurrences in a state were destroyed or if it had been extensively and unsuccessfully looked for. Upon verification of an extant occurrence, SH-ranked elements would typically receive an S1 rank. The SH rank should be reserved for elements for which some effort has been made to relocate occurrences, rather than simply ranking all elements not known from verified extant occurrences with this rank.

SN = Regularly occurring, usually migratory and typically nonbreeding species for which no significant or effective habitat conservation measures can be taken in the state; this category includes migratory birds (concentration sites for migratory birds are grouped in the "Other" category and ranked accordingly), bats, sea turtles, and cetaceans which do not breed in a given state but pass through twice a year or may remain in the winter (or, in a few cases, the summer); included also are certain lepidoptera which regularly migrate to a state where they reproduce, but then completely die out every year with no return migration. Species in this category are so widely and unreliably distributed during migration or in winter that no small set of sites could be set aside with the hope of significantly furthering their conservation. Other nonbreeding, high globally-ranked species (such as the peregrine falcon) that regularly spend some portion of the year at definite localities (and therefore have a valid conservation need in the state) should NOT be ranked SN, but rather S1, S2, etc. This rank is also not for "lost causes", which in someone's opinion cannot be saved. The reasons for assigning the SN rank may not be apparent from the fact pattern on the Element State Ranking Form, since there may be low numbers, etc.

REFERENCE 19

FEDERAL THREATENED (T), ENDANGERED (E), AND CANDIDATE (C1,C2) PLANTS IN LOUISIANA

NAME	COMMON NAME	FED/STATUS	RANK
Agalinis caddoensis+	Caddo Parish False-Foxglove	C1*	GHQ/SH
Amsonia glaberrima	Blue Star	C2	G2Q/S4
Amsonia ludoviciana+	Louisiana Blue Star	C2	G2/S2
Carex decomposita	Sedge	C2	G3G4/SU
Crataegus berberifolia	Hawthorn	C2	G3/S3S4
Croomia pauciflora+	Croomia	C2	G2G3/SH
Cyperus grayioides+	Umbrella Sedge	C2	GUQ/S1
Cypripedium kentuckiense+	Southern Lady's Slipper	C2	G3/S1
Eulophia ecristata+ (=Pteroglossaspis ecristata)	Wild Coco	C2	G3/S2
Ilex amelanchier+	Sarvis Holly	C2	G3/S2
Isoetes louisianensis+	Louisiana Quillwort	C2	G1Q/S1
Lachnocaulon digynum+	Bog Button	C2	G3/S1
Lilaeopsis carolinensis		C2	/S4?
Lindera melissifolia+	Pondberry	E	/SH
Lindera subcoriacea+	Bog Spicebush	C2	G1/S1
Oenothera pilosella ssp. sessilis+ (=O. sessilis)	Evening Primrose	C1	G2Q/SU
Quercus oglethorpensis+	Oglethorpe's Oak	C2	G2/S1
Physostegia correllii+	Correll's False Dragon-head	C2	G2/S1
Physostegia longisepala+	Long-sepaled False Dragon-head	C2	G2G3/S2
Scutellaria thieretii+	Thieret's Skullcap	C2	G2Q/SU
Xyris drummondii+	Drummond's Yellow-eyed Grass	C2	G3/S1

+Listed by La. Natural Heritage Program (LNHP) and is considered rare in Louisiana.

C1 - Taxa for which available information supports the appropriateness of proposing to list them as endangered or threatened. Also included are taxa that may be extinct, indicated by * .

C2 - Taxa for which available information indicates that proposing to list them as endangered or threatened is possibly appropriate, but for which substantial data do not exist to support such action.

(Data primarily obtained from Federal Register, 50 CFR 17, September 27, 1985. Species listed as candidates with ranges that include LA, but for which LNHP has found no documented occurrences in LA were not included above. These species include Plantago cordata (C2), Plantanthera leucophaea (C2), and Schwalbea americana (C2)).

DISTRIBUTION AND HABITAT OF FEDERAL THREATENED, ENDANGERED, AND CANDIDATE PLANT SPECIES IN LOUISIANA

NAME	PARISHES	HABITAT
Agalinis caddoensis	Historic collection in Caddo Parish	unknown
Amsonia glaberrima	Not listed by LNHP. MacRoberts (1988) shows occurrences for the following parishes: Desoto, Red River, Bienville, Winn, Sabine, Vernon, Cameron, St. Helena.	Poorly drained sites in mixed pine-hardwood areas.
Amsonia ludoviciana	Allen, Bienville, Calcasieu, Grant, Natchitoches, Rapides, Sabine, Vernon, Winn.	Flatwoods, often with abundance of pine; higher topographic positions of small streams in hills.
Carex decomposita	Not listed by LNHP. No distribution data on hand.	
Crataegus berberifolia	Not listed by LNHP. Widespread in central and north Louisiana.	Poorly drained areas and on calcareous clays in uplands.
Croomia pauciflora	One collection in 1870 in St. Mary Parish.	unknown
Cyperus grayioides	Bienville, Winn	Deep sands.
Cypripedium kentuckiense	Evangeline, Bossier, Union, Natchitoches, Ouachita, Lincoln, Catahoula, Desoto, Winn, LaSalle, Red River, Grant.	Mesic Hardwood slope forests.
Eulophia ecristata	Beauregard, Allen, Grant, Tangipahoa, St. Tammany, Washington, Jeff Davis.	Upland longleaf pine forests, pine savannahs, coastal prairie.
Ilex amelanchier	Tangipahoa, Washington, St. Tammany.	Poorly drained pine flatwoods, cypress swamps.
Isoetes louisianensis	Washington	Submersed in shallow water on gravel/sand bars in a small stream.

Lachnocaulon digynum	Beauregard, Natchitoches, Vernon.	Hillside bogs
Lilaeopsis carolinensis	Formerly listed by LNHP. Known from: Cameron, E. Baton Rouge, Jefferson, Iberia, Orleans, St. Charles, St. Bernard, St. Tammany, Vermilion, Tangipahoa.	Swamps, fresh marsh, ditches, muddy shores.
Lindera melissifolia	Historic collection in NE Louisiana near Ouachita River.	Bottomland hardwood forest
Lindera subcoriacea	Washington	Bayhead swamp
Oenothera sessilis	Claiborne, Jeff Davis, Morehouse, Rapides, Tensas	Coastal prairie, Bottomlands.
Quercus oglethorpensis	Caldwell	Calcareous clay creek forest.
Physostegia correllii	Cameron	Roadside ditch in coastal prairie region.
Physostegia longisepala	Beauregard, Calcasieu, Allen,	Low woods, coastal prairie, pine savannahs.
Scutellaria thieretii	Allen, Cameron, Iberia, Vermilion. Jeff Davis, Acadia	Coastal prairie.
Xyris drummondii	Beauregard, Natchitoches, Vernon	Hillside bogs.

CANDIDATES FOR FEDERAL LISITNG
APRIL 1987

INVERTEBRATES

Yellow Brachycercus Mayfly	Brachycercus flavus
Schoolhouse Springs Leuctran Stonefly	Leuctra szczytkoi
Sixbanded Longhorn Beetle	Dryobius sexnotatus
American Burying Beetle	Nicrophours americanus
Texas Heelsplitter	Potamilus amphicahaenus
Alabama Heelsplitter	Potamilus inflatus

FISH

Lake Sturgeon	Acipenser fulvescens
Gulf Sturgeon	Acipenser oxyrhynchus desotoi
Pallid Sturgeon	Scaphirhynchus albus
Sturgeon Chub	Hybopsis gelida
Sicklefin Chub	Hybopsis meeki
Blue Sucker	Cycleptus elongatus
Frecklebelly Madtom	Noturus munitus
Crystal Darter	Ammocrypta asperella
Freckled Darter	Percina lenticula
Stargazing Darter	Percina uranidea

REPTILES

Dusky Gopher Frog	Rana areolata sevosa
Alligator Snapping Turtle	Macroclemys temmincki
Black Pine Snake	Pituophis melanoleucus lodingi
Louisiana Pine Snake	Pituophis melanoleucus ruthreni

BIRDS

Reddish Egret	Egretta rufescens
Southeastern American Kestrel	Falco sparverius paulus
Southeastern Snowy Plover	Charadrius alexandrinus tenuirostris
Long-billed Curlew	Numenius americanus
Migrant Loggerhead Shrike	Lanius ludovicanus migrans
Bachman's Sparrow	Aimophila aestavalis

MAMMALS

Southeastern Bat	Myotis austroriparius
Southeastern Big-eared Bat	Plecotus rafinesquii
Mer Rouge Pocket Gopher	Geomys bursarius breviceps
Louisiana Black Bear	Ursus americanus leteolus

FEDERAL THREATENED (T) AND ENDANGERED (E) ANIMALS IN LOUISIANA

INVERTEBRATES

Fat Pocket	Potamilus capex	E
Louisiana Pearlshell	Margaritifera hembeli	E

REPTILES

Green Sea Turtle	Chelonia mydas	T
Hawksbill Sea Turtle	Eretmochelys imbricata	E
Kemp's Ridley Sea Turtle	Lepidochelys kempii	E
Leatherback Sea Turtle	Dermochelys coriacea	T
Loggerhead Sea Turtle	Caretta caretta	T
Gopher Tortise	Gopherus polyphemus	T
Ringed Sawback Turtle	Graptemys oculifera	T

BIRDS

Brown Pelican	Pelecanus occidentalis	E
Bald Eagle	Haliaeetus leucocephalus	E
Peregrine Falcon	Falco peregrinus	T/E
Attwaters Greater Prairie Chicken	Tympanuchus cupido attwateri	E (historic)
Whooping Crane	Grus americana	E (historic)
Eskimo Curlew	Numenius borealis	E (historic)
Piping Plover	Charadrius melodus	T/E
Interior Least Tern	Sterna antillarum athalassos	E
Ivory-billed Woodpecker	Campephilus principalis	E (historic)
Red-cocaded Woodpecker	Picoides borealis	E
Bachman's Warbler	Vermivora bachmanii	E (historic)

Mammals

West Indian Manatee	Trichechus manatus	E
Finback Whale	Balaenoptera physalus	E
Sei Whale	Balaenoptera borealis	E
Sperm Whale	Physeter catodon	E
Florida Panther	Felis concolor corvi	E
Red Wolf	Canus rufus	E (historic)
Blue Whale	Balaenoptera musculus	E

STATE ELEMENT RANKS:

S1 = Critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor of its biology making it especially vulnerable to extirpation from the state. [Critically endangered in state.]

S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of other factors demonstrably making it very vulnerable to extirpation from the state. [Endangered in state.]

S3 = Rare in state (on the order of 20+ occurrences). [Threatened in state].

S4 = Apparently secure in state.

S5 = Demonstrably secure in state.

SA = Accidental in state, including species which only sporadically breed in state.

SE = An exotic species established in state; may be native elsewhere in North America (e.g., house finch or catalpa in eastern states).

SH = Of historical occurrence in the state with the expectation that it may be rediscovered.

SU = Possibly in peril in state but status uncertain; need more information. NOTE: This rank should be used sparingly. Whenever possible, assign the most likely rank and add a question mark (e.g., S2?) to express uncertainty or indicate a range (e.g., S1S2).

SX = Apparently extirpated from state.

GLOBAL ELEMENT RANKS:

G1 = Critically imperiled globally because of extreme rarity (5-or fewer occurrences or very few remaining individuals or acres) or because of some factor of its biology making it especially vulnerable to extinction. [Critically endangered throughout range.]

G2 = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of other factors demonstrably making it very vulnerable to extinction throughout its range. [Endangered throughout range.]

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the east) or because of other factors making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100. [Threatened throughout range.]

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GA = Accidental in North America, i.e. not part of the established biota (e.g., European Cuckoo, Yellow-nosed Albatross, many other bird species).

GE = An exotic species established in North America (e.g., Japanese Honeysuckle).

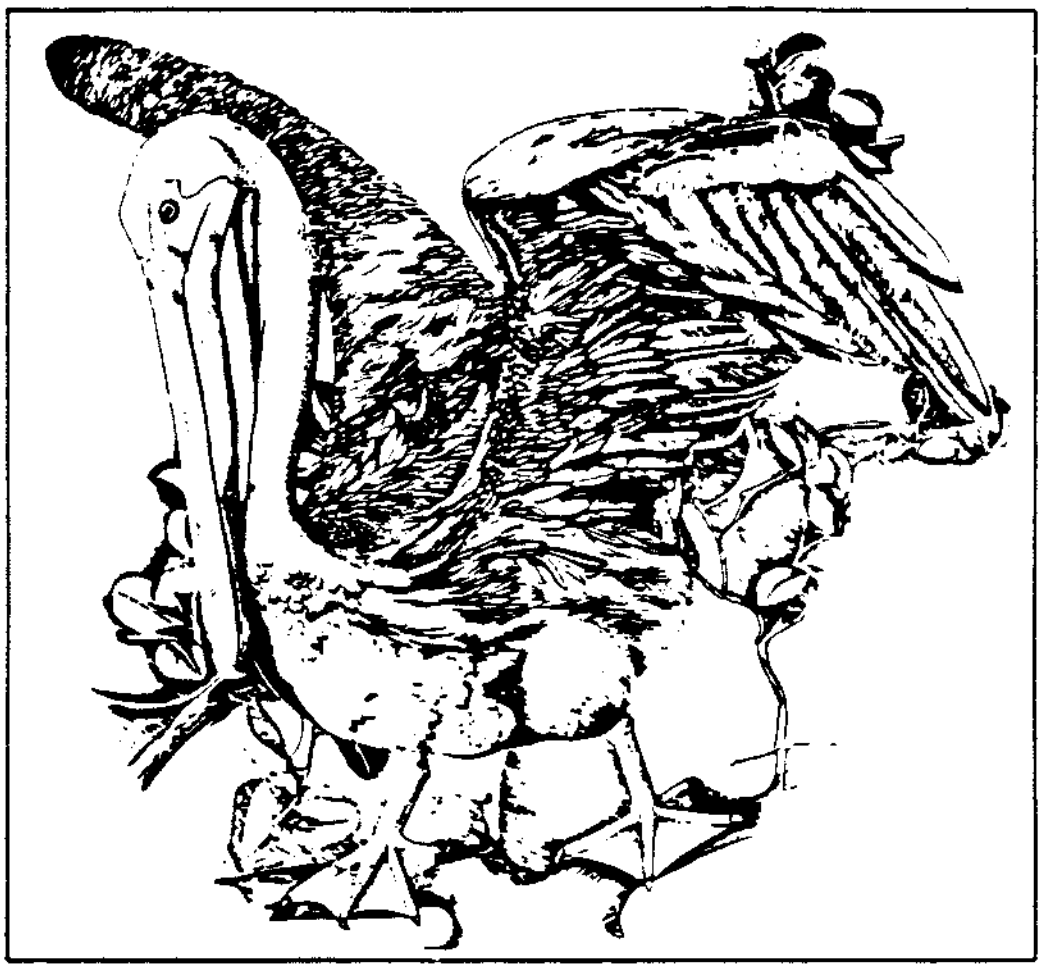
GH = Of historical occurrence throughout its range, i.e. formerly part of the established biota, with the expectation that it may be rediscovered (e.g., Ivory-billed Woodpecker).

GU = Possibly in peril range-wide but status uncertain; need more information. NOTE: This rank should be used sparingly. Whenever possible, assign the most likely rank and add a question mark (e.g., G2?) to express uncertainty or indicate a range (e.g., G1G2, G1G3).

GX = Believed to be extinct throughout range (e.g., Passenger Pigeon).

REFERENCE 20

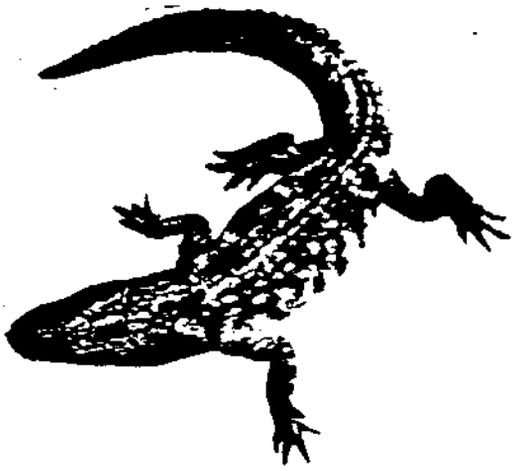
THREATENED AND ENDANGERED
ANIMALS OF LOUISIANA



SARA SMITH "BROWN PELICAN" ©

Compiled by M.B. Watson

Louisiana Department of Wildlife and Fisheries



AMERICAN ALLIGATOR
Alligator mississipiensis

The alligator is wide spread in Louisiana and is harvested in certain areas of the state. The animal holds three separate classifications under the endangered species act in Louisiana. It is endangered in the northern 4/5 of the state and threatened in the southern 1/5 south of an east-west line along I-10, I-12, U.S. Hwy. 190 and La. Hwy 12. In certain portions of the coastal parishes it is threatened under the "similarity of appearance" clause which means it is similar or identical to an animal which is endangered. In the latter portion of the state a controlled harvest of the animal is allowed.

DESCRIPTION: Adult alligators are large lizard like reptiles which vary from 6-16 1/2 ft. in length. The general coloration is black to dark gray, but yellowish crossbands are seen on immature to young specimens. The head is smooth in front of the eyes and the snout is broadly rounded.

PREFERRED HABITAT: The alligator is a characteristic resident of wetlands in the Gulf coast and lower Atlantic Coastal Plains

FOOD HABITS: The alligator is a carnivore and will take a variety of animal prey. The alligator will float partially submerged with eyes and nostrils above the water surface as it approaches its unsuspecting quarry. The alligator suddenly grab its prey, shakes it vigorously tearing it into pieces and swallows it in large chunks.

LIFE HISTORY: Nests are made in mounds of debris 4 to 7 feet in diameter and 1 1/2 to 3 feet high. The eggs are buried in the mound in clutches of 20-50 eggs. The eggs hatch in about 9 weeks. The young call to the female here upon she opens the nest and releases them. The young often remain in a group called a "pod" for a time after hatching.

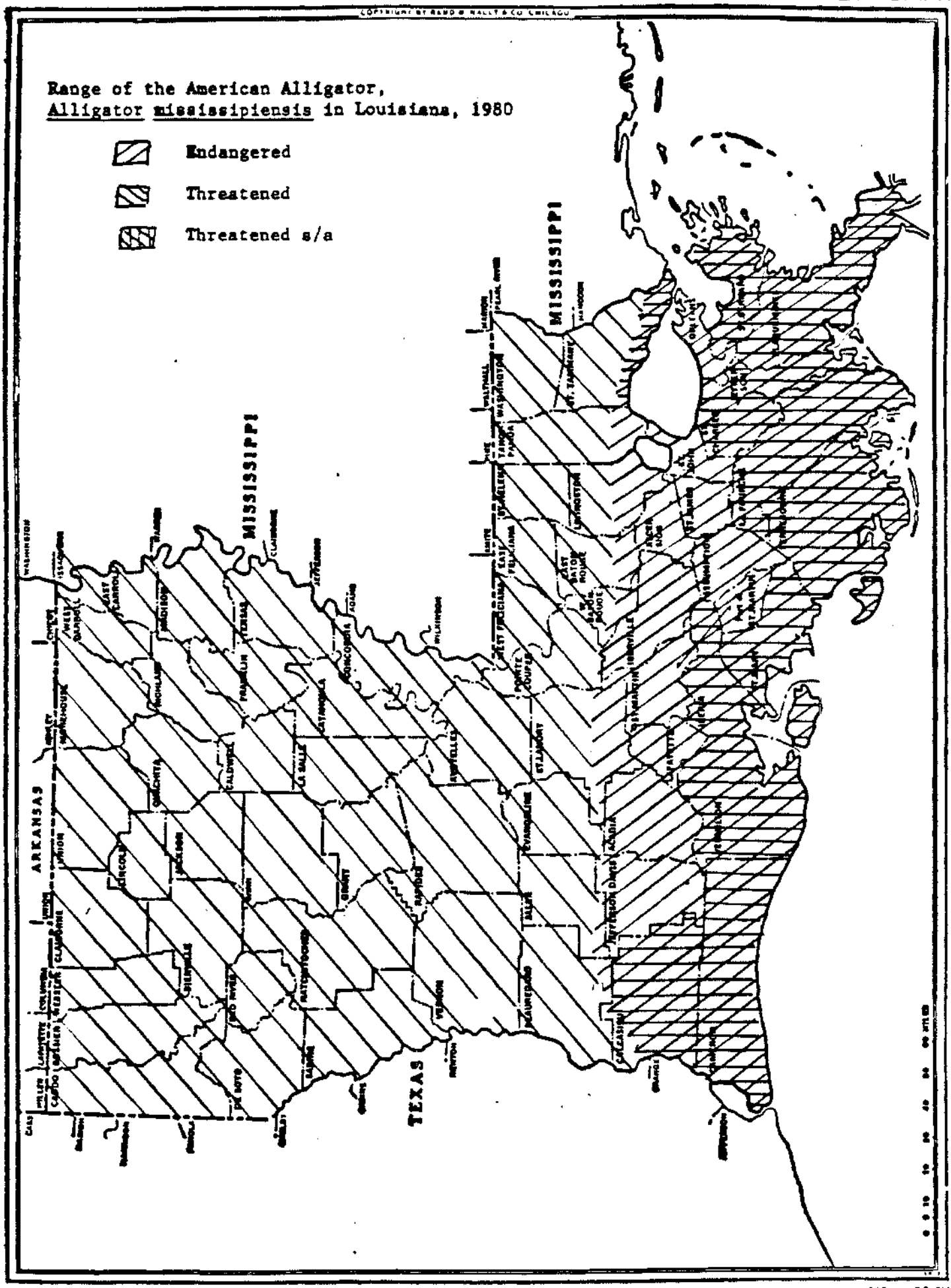
The alligator is very vocal during the mating season and bellowing usually begins around mid-March. The bellow probably serves to not only attract the females but to identify territory which can vary from 6-40 acres.

Range of the American Alligator,
Alligator mississipiensis in Louisiana, 1980

Endangered

Threatened

Threatened s/a



PEREGRINE FALCON
Falco peregrinus anatum
F. p. tundrius

The peregrine falcon is the famous "duck hawk" and has become rare in the U.S. dur to chlorinated hydrocarbon contamination in the aquatic environment.

DESCRIPTION: The head of the Peregrine Falcon is black with heavy moustachial stripes. The upper body is slate-blue barred with dark brown. The primary feathers are dark brown, but the tail feathers are barred like the back tipped with light yellow-brown. The throat and belly are white to sienna-orange with narrow stripes on the chest and dark brown bars on the belly and flanks. The beak is slate-blue with a yellow cere, the eyes are dark brown and the feet and legs are yellow to greenish-yellow with black claws. The birds range in size from 13-19 inches. The females are much larger than the male.

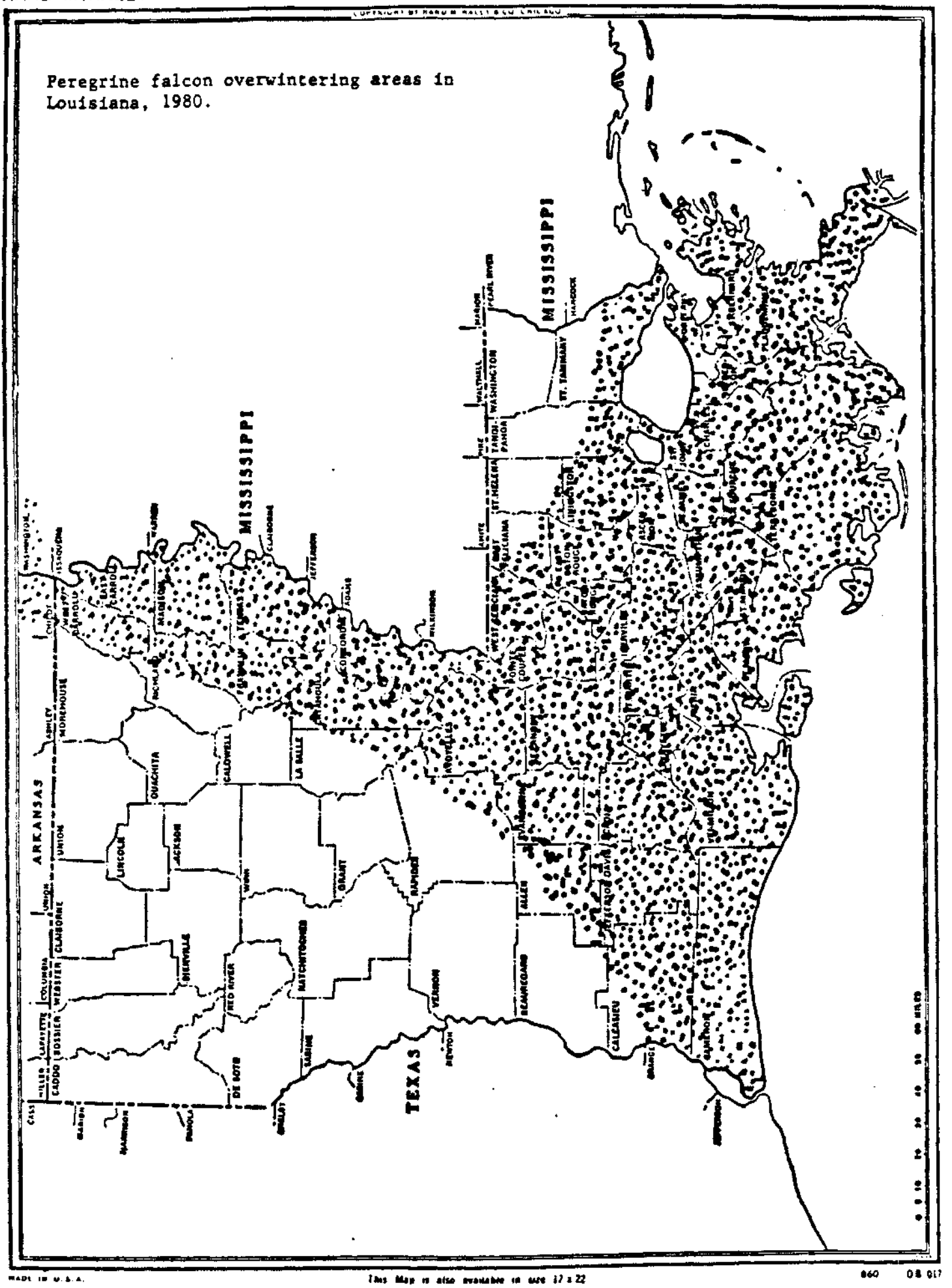
PREFERRED HABITAT: The species in Louisiana is likely to be found only near the Gulf. The preferred habitat of the Peregrine is rocky ledges, however they will nest in trees in flat terrain. There are no breeding Peregrines in Louisiana.

FOOD HABITS: The Peregrine falcon feeds primarily on other birds. They usually hunt their prey in the air and kill by diving on the flying bird striking it with their talons. They then catch the dead bird in air or follow it to the ground where they break the neck of its prey. Primary prey are bluejays, flickers, meadowlarks and pigeons. As indicated above, the falcon will also take ducks. The falcon's eyes are placed so it can see straight ahead, to the sides, or below.

LIFE HISTORY: Falcons usually are sexually mature at three years. After mating, the eggs are laid in clutches of four usually in late March and April. Incubation last about 33 days. The female does most of the incubating while the male hunts.

The Falcons prefer high places such as cliffs to build their nests, but they will utilize buildings in areas where there are abundant pigeon populations.

Peregrine falcon overwintering areas in Louisiana, 1980.



BALD EAGLE
Haliaeetus leucocephalus

The Bald Eagle is the national bird of the United States. It has become endangered because of habitat destruction and chloronated hydrocarbon contamination in its foodchain.

DESCRIPTION: The head, neck and tail of the adult are white while the remainder of the plumage is dark edged in pale olive-gray. The beak, cere, feet and skin around the eyes are dull yellow, the eyes are light yellow and the claws are black.

The eagle is a large bird ranging from 27-30 inches in length with a wing span to 7 feet.

PREFERRED HABITAT: Although the Bald Eagle is ubiquitous in North America it is seldom found far from a source of water as it is primarily a fish eater. Largest concentrations are in Alaska.

FOOD HABITS: As stated above the Bald Eagle is primarily a fish eater, but it will take carrion. The eagles fly above the water and capture their prey in their talons without diving into the water. They also rob ospreys of their catch.

LIFE HISTORY: The nesting pair breed in the most favorable season. In Louisiana mating occurs in late fall and the eggs are laid before Christmas. The young spend 3 months in the nest. Eagles prefer high inaccessible places for their nest of sticks but remoteness is not essential. The nests are used for many years.

The nest is lined with soft material and the eggs are covered with it during the absence of the adults.

The clutch is generally composed of 2 white eggs, occasionally to rarely one, three or four.

During incubation both parents tend the eggs but the female is dominant in this activity. The male feeds the female during incubation, but both parents care for the young after hatching.

In nonbreeding seasons the eagles are resident within the range, but northern eagles may winter in the south along the coast and large rivers that are ice free, while southern eagles will fly north in summer.

Bald Eagle, Haliaeetus leucocephalus nesting and wintering sites in Louisiana, 1980

Wintering

Nesting

ARKANSAS

MISSISSIPPI

TEXAS

MISSISSIPPI

REFERENCE 21

SOIL SURVEY

East Baton Rouge Parish
Louisiana

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
LOUISIANA AGRICULTURAL EXPERIMENT STATION

Issued September 1968

1. Mhoon-Commerce association

Dominantly level, poorly drained and somewhat poorly drained, loamy soils on broad natural levees of the Mississippi River flood plain; protected from overflow

This association consists of broad bottom lands of the Mississippi River. It occurs at an elevation of 20 to 25 feet. The topography is predominantly level, but it is broken by narrow, gently convex ridges and old channels, which run northwest to southeast across much of the association.

This association makes up about 4 percent of the parish. About 60 percent is Mhoon soils, 25 percent is Commerce soils, and 15 percent consists of Dundee, Sharkey, and Tunica soils.

Mhoon soils have a surface layer of dark grayish-brown silty clay loam to silty clay and a gray, mottled subsoil that normally consists of stratified silt loam and silty clay loam.

Commerce soils are as much as 2 feet higher in elevation than Mhoon soils. They have a surface layer of dark grayish-brown loam or silt loam. The subsoil is grayish brown, mottled with brown in the upper part, and is dominantly gray below a depth of 18 to 24 inches.

Dundee soils are on level, low ridges and are at about the same elevation as Mhoon and Commerce soils. Sharkey and Tunica soils are in nearly level areas and in slight depressions.

Most farms in this association contain several hundred acres and are used chiefly for livestock production. Mhoon and Commerce soils are fertile and are well suited to most crops grown in the parish. They are fairly easy to work and to keep in good tilth. The available water capacity is high. Almost all areas need artificial drainage if they are used for cultivated crops or pasture.

2. Sharkey-Tunica association

Level or nearly level, poorly drained, clayey soils of the Mississippi River flood plain; protected from overflow

This association consists of back swamps of the Mississippi River. The elevation is about 20 feet, which is slightly lower than that of the Mhoon-Commerce association. The topography is mainly level, but minor areas have a repeating pattern of narrow depressions, or swales, and narrow, convex ridges that have slopes of 2 to 3 percent.

This association makes up about 3 percent of the parish. About 60 percent is Sharkey soils, 30 percent is Tunica soils, and 10 percent consists of Dundee and Tensas soils.

Sharkey soils have a surface layer of dark grayish-brown clay and a lower subsoil of gray, plastic clay. They are at a lower elevation than the rest of the soils. Most areas are broad and flat, but a few small areas are in narrow depressions between low ridges occupied by Tunica soils.

Tunica soils are in level areas and on narrow, convex ridges. They have a surface layer of dark grayish-brown clay and are underlain at a depth of 18 to 24 inches by grayish-brown to gray silty clay loam. Dundee and Tensas soils are on long, narrow, convex ridges.

Most farms in this association contain several hundred acres and are used chiefly for livestock production. About 50 percent of the acreage is in mixed hardwood forest, and 40 percent is in pasture. Only a few small areas are cultivated. Because of the plastic clay surface layer, the soils are cloddy and difficult to work. Permeability is very slow, and the available water capacity is moderate. Pasture and hay are more suitable than cultivated crops.

3. Sharkey-Mhoon-Crevasse association

Poorly drained to excessively drained, clayey, loamy, and sandy soils of the Mississippi River flood plain; subject to overflow

This association consists largely of back swamps and depressions on the bottom lands of the Mississippi River. The general pattern consists of gently sloping Crevasse soils along riverbanks, level and depressional Sharkey soils in back swamps, and level or nearly level Mhoon soils between the Crevasse and the Sharkey soils. The soils are flooded at least once or twice each year.

This association makes up about 6 percent of the parish. Sharkey and Tunica soils account for about 60 percent of the acreage; Loamy alluvial land and Mhoon soils, 30 percent; and Crevasse soils, 10 percent.

Most of this association is in mixed hardwood forest, but some areas are used for grazing during dry periods. Most areas are parts of large farms that are used chiefly for the production of beef cattle. Much of the acreage is accessible only from the river. The soils are high in natural fertility, but because they are flooded, they are not suited to cultivated crops and are little better suited to improved pasture.

4. Cascilla-Ochlockonee association

Level or nearly level, well-drained, loamy soils on flood plains of the Amite River, the Comite River, and tributaries of these; subject to overflow

This association consists of broad and narrow flood plains of the Amite River, the Comite River, and the tributaries of these streams. Cascilla and Ochlockonee soils on ridges and Waverly and Falaya soils in depressions form a repeating pattern along the larger streams. Broad depressions and back swamps of the flood plains are made up of Waverly and Falaya soils.

This association makes up about 7 percent of the parish. About 60 percent is Cascilla soils, 25 percent is Ochlockonee soils, and 15 percent consists of Waverly and Falaya soils.

Cascilla soils are dark-brown, well-drained silt loams, and Ochlockonee soils are well-drained, yellowish-brown fine sandy loams. Both are in large, level or nearly level areas and on hummocky ridges that have a slope range of 1 to 3 percent. Waverly and Falaya soils are poorly drained and somewhat poorly drained silt loams and are in swales and back swamps.

More than 90 percent of this association is in forest consisting of mixed hardwoods and some pines. Most areas make up parts of large farms. Sales of beef cattle, timber products, and sand and gravel are the main sources of farm income. Deposits of sand and gravel are near or in the larger streams. The broader flood plains are flooded once or twice each year, usually in March or April, and the narrow flood plains are flooded frequently. Areas that are flooded least often can be used for improved pasture. Volunteer plants provide seasonal grazing. Most of the woodland is grazed also, but the forage is scanty and of poor quality. Because the soils are frequently flooded, they

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
LOUISIANA AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
EAST BATON ROUGE PARISH, LOUISIANA

SCALE IN MILES
1 0 1 2 3 4

SOIL ASSOCIATIONS

1 Mhoon-Commerce association: Dominantly level, poorly drained and somewhat poorly drained, loamy soils on broad natural levees of the Mississippi River flood plain; protected from overflow

Sharkey-Tunica association: Level or nearly level, poorly drained, clayey soils of the Mississippi River flood plain; protected from overflow

3 Sharkey-Mhoon-Crevasse association: Poorly drained to excessively drained, clayey, loamy, and sandy soils of the Mississippi River flood plain; subject to overflow

Cascilla-Ochlockonee association: Level or nearly level, well-drained, loamy soils on flood plains of the Amite River, the Comite River, and tributaries of these; subject to overflow

Olivier-Loring association: Nearly level to gently sloping, somewhat poorly drained and moderately well drained, loamy soils on ridges and in broad valleys

Olivier-Providence association: Nearly level to gently sloping, somewhat poorly drained and moderately well drained, loamy soils on ridges that have long side slopes

Olivier-Loring-Terrace escarpments association: Level to gently sloping, somewhat poorly drained and moderately well drained, loamy soils and steep escarpments

8 Olivier-Calhoun-Loring association: Dominantly level, poorly drained to moderately well drained, loamy soils on broad flats and in slight depressions

Calhoun-Zachary-Frost association: Level or nearly level, poorly drained, loamy soils on broad flats and in depressions

Freeland-Loring-Olivier association: Level to sloping, moderately well drained and somewhat poorly drained, loamy soils on natural levees above the flood plain of the Amite River, the Comite River, and smaller streams

11 Deerford-Verdun association: Level or nearly level, somewhat poorly drained, loamy soils that have a high content of sodium

Jeanerette association: Dark-colored, somewhat poorly drained, loamy soils, chiefly in depressions

August 1967


EAST FELICIANA PARISH
91°10'
91°00'
Faulkner Lake
PROFIT ISLAND
PROFIT ISLAND
PARISH
RIVER
THOMAS POINT
BATON ROUGE
N
WEST MISSISSIPPI
Longwood
Bayou
IBERVILLE PARISH
ASCENSION P
AMITE RIVER

(Joins sheet 18)

Scale 1:20

REFERENCE 22

PRELIMINARY Health Assessment for

PETRO-PROCESSORS OF LOUISIANA, INCORPORATED

CERCLIS NO. LAD057482713

SCOTLANDVILLE, EAST BATON ROUGE PARISH, LOUISIANA

DECEMBER 6, 1990

PRELIMINARY HEALTH ASSESSMENT

PETRO-PROCESSORS OF LOUISIANA, INC.

Scotlandville, East Baton Rouge Parish, Louisiana

CERCLIS NO. LAD057482713

Prepared by

Louisiana Department of Health and Hospitals

Under Cooperative Agreement with the

Agency for Toxic Substances and Disease Registry

SUMMARY

The Petro-Processors of Louisiana, Inc. (PPI) Site, located in Scotlandville, East Baton Rouge Parish [county], Louisiana, is on the National Priorities List (NPL). The PPI Site consists of two separate locations: the Brooklawn Site and the Scenic Site. A Consent Agreement, negotiated with the generators, includes a tentative framework for developing a remedial plan. Release of contaminants into the air during remedial activities has halted remediation on the site.

Both sites contain chlorinated organic solvents and a spectrum of organic wastes from petrochemical processes and refining. Contaminants have been detected in samples of four environmental media (soil, groundwater, sediment, and air) at the Brooklawn Site, and in three media (soil, groundwater, and air) at the Scenic Site.

Contaminants have been detected off-site at the Brooklawn Site (in sediment and fish), but no off-site monitoring has been conducted at the Scenic Site. Until remedial action is taken at the site, concern for public health stems from: (1) the volatilization of contaminants during remedial activities, which could be a source of toxicant exposure for residents and workers; (2) ingestion of fish and wildlife contaminated with hexachlorobenzene and hexachlorobutadiene; (3) the potential of groundwater contamination from agents present on-site; and (4) dermal contact with contaminated sediments off-site.

BACKGROUND

The Petro-Processors, Inc. (PPI) Site is in Scotlandville, Louisiana and consists of two separate locations, the Brooklawn Site and the Scenic Site. Although these sites are approximately two miles apart, they are considered a single National Priorities List (NPL) Site. The State of Louisiana and the U.S. Department of Justice filed suit against PPI in 1980. As an outcome of the suit, a Consent Decree was negotiated by which the generators were to develop and implement remedial and long-term programs to protect human health and the environment. An outline of a proposed remediation plan is included in the Consent Decree.

Negotiated remedial activities, begun in November 1987 at the Brooklawn Site, were terminated in December 1987 before completion because they resulted in air concentrations of volatile organic chemicals (VOCs) that exceeded OSHA limits. The final method of remediation is once again under negotiation between the responsible parties and State and Federal regulatory agencies.

The Brooklawn Site, which was in operation from 1969 to 1979, contains chlorinated solvents and various organic wastes from petrochemical processes and refining, which are present in soils and groundwater.

The site is situated on 50 acres and contains an elevated bluff area and low-lying batture area, which is in the Bayou Baton Rouge floodplain. Bayou Baton Rouge borders the north and west sides of the site. Initial waste disposal was into unlined pits in the bluff area. The underlying soil has alternating sand and clay layers. The low-lying batture area held a single lagoon, which contained liquid waste and drums. On-site soil and groundwater contamination occurred as wastes seeped through the soil. Water also flowed from the bluff area down to the batture, carrying contaminated soil. In 1970, a spill carried contaminants into the lower batture area. Results show a migration of contamination down the slope and into Bayou Baton Rouge and Cypress Lake, resulting in contaminated soils, sediment, groundwater, and aquatic organisms.

The Scenic Site covers approximately a seven-acre area on the west side of Louisiana Highway 61, two miles north of Scotlandville, Louisiana in East Baton Rouge Parish. This site was in operation from 1965 to 1969. Highway 61 delineates the eastern site boundary, and the Bayou Baton Rouge borders the northern and western boundaries. Waters from the bayou are in direct contact with highly eroded bluff walls along the western boundary. Future erosion could threaten site integrity. On-site soil and groundwater contamination has resulted from the disposal of organic compounds and metals into a large unlined pit, 750 feet long by 450 feet wide (approximately five acres) and 20 to 24 feet deep. The

site contains an estimated 3.5 million cubic feet of contaminated material, including partially stabilized and liquid organic compounds with a small quantity of standard industrial debris (empty drums, pipe, plastics, etc.) scattered throughout. Contaminants may have migrated into Bayou Baton Rouge, affecting both surface water and sediment quality in this portion of the system. No analytic data are available on the presence of contaminants in aquatic organisms near the Scenic Site.

Site Visit

On October 7, 1988, a site visit was conducted to both the Brooklawn and Scenic Sites; the sites were observed from outside the premises, but neither was entered.

The Brooklawn Site was well marked, and a six-foot barbed-wire fence encompassed it. No evidence of contamination was visible from the fence line. Groundwater monitoring wells and recovery pipes were visible. A large pile (50 feet x 25 feet) of solid material or soil was covered with black plastic. Observed populations at risk included approximately 200 employees at the plants across the road. The area is rural, and land surrounding the site is used for recreation, grazing, and agriculture. An extensive industrial corridor extends to the south. The terrain includes an elevated bluff and low-lying area adjacent to the bayou.

At the Scenic Site, no evidence of contamination was visible from the fence line. Observed populations at risk include residences within 200-300 yards from the site. Recent excavation work was evident. The site was secured with a six-foot hurricane fence, topped with barbed wire and adequately posted. Land uses in the surrounding areas include recreational activities, grazing of livestock, and agricultural cultivation, and local human activity includes fishing and hunting for table foods. The terrain at the site includes a high bluff (disposal cell) and evidence of steep banks dropping to Bayou Baton Rouge along the site's western edge.

ENVIRONMENTAL CONTAMINANTS AND PHYSICAL HAZARDS

BROOKLAWN SITE

On-site Contamination:

The levels of organic contaminants at the Brooklawn Site are shown in Table I. The data for on-site soils and groundwater contaminants are based on data from Ecology and Environment, 1982, TERA Corp. study, 1983, and the most recent data on semiannual groundwater monitoring from NPC Services (NPC),

June 29, 1988. Air-monitoring data were based on reports by Jacobs Environmental, November 2, 1987, to February 29, 1988, and from June 6 to July 17, 1988.

The site contains large volumes of organic contaminants including numerous chlorinated hydrocarbons (such as di-, tri- and tetrachloroethane isomers, hexachlorobenzene and hexachlorobutadiene), benzene, ethylbenzene, pyrene, and toluene.

Off-site Contamination:

Several chlorinated hydrocarbons have migrated off-site and have been detected in sediments in Bayou Baton Rouge. The assessment performed to determine off-site migration of contaminants was based on the following references: 1983, TERA Corp., Sediment in Bayou Baton Rouge, 1983, Louisiana Department of Environmental Quality (LADEQ), Sediment in Bayou Baton Rouge and Devil's Swamp Lake, 1985; Louisiana Department of Health and Hospitals (LADHH) and LADEQ, Analysis of Fish Tissue from Devil's Swamp Lake, 1986. The compounds of primary concern are hexachlorobenzene and hexachlorobutadiene because of their potential for bioaccumulation. Table II summarizes the off-site contaminants. [See Table II]

Physical Hazards:

No apparent physical hazards observed or listed in available documentation at the PPI, Brooklawn or Scenic Sites. The sites are fenced to limit access.

SCENIC SITE

On-site Contamination:

The concentrations of organic contaminants detected at the Scenic Site are shown in Table III. Data for on-site soils and groundwater are based on data from Ecology and Environment, 1982, from the TERA Corp. study, 1983, and the most recent data on semiannual groundwater monitoring from NPC Services, June 29, 1988.

Air-monitoring data were taken from reports submitted to EPA by Jacobs Environmental from November 2, 1987, to January 26, 1988, and three dates in February 1988.

The contaminants studied include 1,2-dichloroethane, 1,2-dichloroethylene, trichloroethylene, tetrachloroethylene, 1,2-dichloropropane, hexachlorobutadiene, and hexachlorobenzene. [See Table III]

Off-site Contamination:

No sampling or analysis have been undertaken to determine off-site migration of contaminants from the Scenic Site into adjacent Bayou Baton Rouge. Some contaminants have probably migrated off-site into the bayou area.

Physical Hazards:

No physical hazards were apparent.

DEMOGRAPHIC POPULATION NEAR SITE

Minimal demographic information is available for either site. At the Brooklawn Site, less than five homes are estimated to be within a one-mile radius. Two industrial complexes, which employ approximately 200 people, are located approximately 400 yards north of the site.

Demographic information available for the Scenic Site indicates that approximately 15 residences are within a one-mile radius of the site. These residences house approximately 50 people, some of whom depend on groundwater for domestic uses.

EVALUATION

Site Characterization and Data Needs

1. Environmental Media

Various contaminants have been detected on and off the Brooklawn Site in samples from five environmental media (soil, groundwater, air, sediment, and fish tissue) and at the Scenic Site in three environmental media (soil, groundwater, and air). Most sampling has been sporadic, with samples collected at various locations and times and analyzed by different methods with varying levels of sensitivity. Analytic testing has focused on VOCs and acid/base/neutral extractable compounds. Early testing also included analysis for inorganic toxicants.

Groundwater:

No information has been provided concerning the hydrogeologic characteristics of formations underlying or surrounding either site. Although on-site monitoring wells are present, no off-site monitoring wells are available to determine the lateral migration of subsurface contamination. Some contaminants identified are mobile in soils.

The most recent groundwater monitoring at the Brooklawn Site shows no detectable levels of contaminants in samples taken from wells located around the perimeter of the site. Both deep and shallow groundwater monitoring wells are located upgradient and downgradient from the site. A number of recovery wells (at approximately the same depth as the shallow monitoring wells) have been installed on-site for groundwater recovery from a central area of the site. Liquid recovered from these wells has a COD (chemical oxygen demand) greater than 925,000 mg/l, indicating that the composition is primarily organic constituents. The recovered liquid is incinerated off-site.

Some of the contaminants identified as present at the Scenic Site are highly mobile in soils and highly soluble in water. Most recent monitoring data on-site groundwater shows 96 ppb 1,2-dichloroethane, 75 ppb 1,1-dichloroethane, and 18 ppb trichloroethane in Monitoring Well SUG-1S, the shallow upgradient well located in the northwest corner of the site. The degree of contamination that may be moving off-site is difficult to determine from data listing only on-site monitoring wells. Off-site groundwater monitoring data is needed to determine whether contaminants are moving off-site.

Surface Water:

Storm water runoff at the Brooklawn Site is captured and treated by activated carbon filtration. This procedure is intended to prevent the migration of contaminated soil particles off-site.

Rainwater that percolates through soils at the site is likely to pick up contaminants and increase the potential for groundwater contamination.

Storm water runoff is not captured at the Scenic Site. During periods of heavy rainfall, particulates at the surface of barren soils may be washed off-site and act as vectors of transport for contaminants bound to the soils. Bayou Baton Rouge is the local surface area relief for water runoff and would act as a sink for contaminants migrating off-site in such a manner. Surface waters from rainfall also potentially contaminate groundwaters further by percolating through contaminated soils, particularly in areas of bare or sparse ground cover.

Contamination of surface waters and sediments in Bayou Baton Rouge may have resulted from contaminant migration off the Scenic Site. Because some of these contaminants may accumulate in plants and animals in this area, sampling and analysis of aquatic organisms from Bayou Baton Rouge is needed to determine whether contaminants that bioaccumulate are present in fish or other aquatic life that is consumed.

Soils:

Many contaminants present in the surface and subsurface soils at both sites are not likely to bind tightly to soil particles, facilitating possible percolation or lateral migration, and resulting in the further potential for groundwater contamination.

Soils that migrated off-site before remediation activities are subject to further dispersion by means of several pathways. Contaminated sediments could contribute to degradation of surface-water quality; some contaminants identified as present on-site have the potential to bioaccumulate; motile aquatic organisms within the system are a potential vector of migration; and resuspension of contaminated sediment could also act as a vector for contaminant migration. Data are needed on the off-site migration of contaminants, particularly those that bioaccumulate, such as hexachlorobenzene and hexachlorobutadiene. Potential pathways of exposure from off-site migration should also be identified. These might include exposure through recreational activities (fishing, hunting, or water sports) or the consumption of contaminated fish or wildlife, such as squirrels, raccoons or turtles.

Leaching of contaminants at the Scenic Site through the bluff walls and into the Bayou Baton Rouge could occur in addition to the potential groundwater contamination. Soil particles could be transported off-site through erosion of this same bluff by Bayou Baton Rouge. No documentation was provided on the degree to which erosion has taken place or possible measures being considered to remedy the situation.

If off-site migration of contaminants to the bayou has occurred by any of the pathways identified above, these contaminants could migrate further off-site by several mechanisms. Contaminated sediments could act as a source of degradation of overlying surface water quality; some contaminants identified on-site have a potential to bioaccumulate, bioconcentrate, and biomagnify within the system; and suspension and resuspension of contaminated sediment could also act as a vector for contaminant migration. No sampling and analysis of sediments or biological tissue from the bayou adjacent to the Scenic Site has taken place.

Air:

The air-sampling protocol included sampling at the fence line. Air contaminants have been detected during remedial activities and occasionally at other times. The detection limits of certain contaminants were orders of magnitude above regulatory levels and, therefore, provided little information in assessing potential health hazards.

Monitoring of air quality has been performed continuously at the Brooklawn Site since remedial action began. Data collected from November 2, 1987, to February 27, 1988, and from June 12 to July 17, 1988, were reviewed for this Health Assessment. Documentation of air quality at the Scenic Site is limited to a period from November 2, 1987, to February 26, 1988. Air monitoring

is needed when any remedial activity is underway because organic compounds could volatilize when the soil is disturbed.

Fish:

Contaminants from the Brooklawn Site, including hexachloro-benzene and hexachlorobutadiene, have been detected in fish in the area. As a result, the adjacent bayou has been posted as a "no fishing" area. No data are available on the presence of contaminants in fish or wildlife at the Scenic Site.

2. Demographics and Land Use

Demographic information was not included in the data reviewed for this assessment and minimal information was obtained during site observation. To assess possible public health concerns, more information is needed on the following: (1) size, location, age distribution, and socioeconomic status of the nearby population; (2) populations at special risk; (3) location of residential wells that may obtain water from potentially contaminated aquifers; and (4) present land and water uses (agricultural, grazing, recreational) in the vicinity of the site.

Any future Remedial Investigations should seek information concerning land uses and demographic characteristics of the area surrounding the site as described above.

3. Quality Assurance and Control

Environmental sampling has been conducted periodically with various types of samples collected at different times and locations and using various sampling procedures. Because these samples have been analyzed by methods having different detection limits, results have been reported in different units, and levels of Quality Assurance/Quality Control (QA/QC) have varied from study to study, the comparison of results difficult. No documentation of sample handling and preservation is available. The analysis of air samples includes data on blanks but not on the analysis of duplicates, split samples, or standards. No discussion of recovery efficiency or analysis is included. Although some monitoring data gathered, analyzed, and validated by regulatory agencies appear to have undergone laboratory QA/QC procedures, no QA/QC information has been provided for most of the analytic data received. In particular, data before 1985 have no QA/QC documentation.

Because the conclusions presented in this Health Assessment are based on the information provided, the accuracy of these conclusions is determined by the availability and reliability of that data.

ENVIRONMENTAL PATHWAYS

Environmental pathways by which site contaminants may migrate off-site include groundwater, surface water, wind- and water-induced soil erosion, sediment transport, fugitive dusts and volatilized organic chemicals, and bioaccumulation in plants and animals.

Transport pathways for wastes that have already migrated off-site include transport by motile aquatic organisms and sediment resuspension and transport according to water flow. The contaminants warranting concern are chlorinated organic solvents and other waste byproducts associated with petrochemical refining and the manufacture of synthetic organic fibers. The Consent Decree does not address specific remediation processes for all transport pathways. Various remedial alternatives are proposed by the operators and the plans reviewed by EPA and the LADEQ. Apparently, no comprehensive plan is available for the site.

Groundwater:

Recovery wells at the Brooklawn Site are removing liquid that contains primarily organic contaminants (COD=925,000 mg/l). The removal of liquid below the site is intended to create a zone of negative pressure, which, if maintained, may prevent further subsurface migration of contaminants off-site. No off-site monitoring of groundwater is underway to confirm this.

Chlorinated organic solvents have been detected on-site at the Scenic Site, but groundwater is not being monitored off-site. Because contaminants have been detected in groundwater on-site, a potential exists for off-site groundwater contamination at both the Brooklawn and Scenic Sites. The Consent Decree does not address specific actions to remediate all contaminants in on-site groundwater.

Surface Water:

Surface water runoff is collected and treated at the Brooklawn Site by activated carbon filtration. Surface water at the Scenic Site is not captured and flows off-site along with soils. The runoff collects in Bayou Baton Rouge, which in turn flows into Devil's Swamp Lake. Surface water from rain at both sites has the potential to percolate through contaminated soils and contribute to further groundwater contamination. The Consent Decree does not include a specific plan for remedial action to prevent the runoff

of contaminants into Bayou Baton Rouge from the Scenic Site and does not address specific means to prevent or minimize the downward migration of contaminants through soil to groundwater.

Air:

Release of contaminants from this site into the air during remedial activities is a major transport mechanism. On-site contaminants have the potential to volatilize and redeposit. Other contaminants that are more likely to absorb to soil particles could migrate as windblown dust particles carried from areas of exposed ground or sparse vegetative cover. The Consent Decree does not address specific actions to remediate this pathway of exposure.

HUMAN EXPOSURE PATHWAYS

The contamination of environmental media described previously results in the following potential human-exposure pathways, none of which are addressed by the Consent Decree.

(1) Ingestion and dermal contact with contaminants in ground and surface water. Locations and uses of wells supplying residential water are not documented. Contaminated groundwater, if present, is a possible human exposure pathway. Storm water runoff from the Scenic Site may enter Bayou Baton Rouge, with the potential for bioaccumulation in aquatic animals which may be ingested.

(2) Inhalation of contaminated windblown particles and inhalation of volatilized contaminants. This route is associated with remediation activities and is of minimal public health concern when cleanup activities are halted. Residents, workers at the two nearby industrial sites, and workers conducting remedial activities are the most likely receptors by this exposure route.

(3) Ingestion of contaminated animal tissue. Bioaccumulation of off-site contaminants has been detected in aquatic organisms in Bayou Baton Rouge and throughout Devil's Swamp Lake. This provides a pathway to exposure, if these tissues are consumed. The area is posted with "no fishing" signs, but no data were provided on the hunting and fishing prevalence in the area.

At the Scenic Site, aquatic organisms in Bayou Baton Rouge are likely to be contaminated and pose a possible pathway of exposure.

(4) Contaminated Sediments. Dermal absorption through contact with contaminated sediments located off-site in the Bayou Baton Rouge and Devil's Swamp Lake is a potential pathway of exposure for humans who disregard posted warnings.

PUBLIC HEALTH IMPLICATIONS

The Petro-Processors, Inc. Site poses a public health concern in its current state of contamination. The contaminants of concern include hexachlorobenzene, hexachlorobutadiene, benzene, and chlorinated organic solvents such as 1,2-dichloroethane, vinyl chloride, trichloroethylene and 1,1,2,2 tetrachloroethane. These and several other compounds are present on-site at concentrations that are likely to be of public health concern. Routes of exposure to these contaminants include: (1) groundwater potentially contaminated by agents present on-site and detected in on-site recovery wells; (2) dermal exposure to contaminated soils on-site and contaminated sediments off-site in Bayou Baton Rouge; (3) inhalation of volatile organic contaminants during remedial activities by residents, industrial workers in the vicinity, and remedial workers; and (4) ingestion of fish and wildlife contaminated with compounds that bioaccumulate.

The Consent Decree neither addresses specific remedial action for all assessed pathways of exposure nor identifies pathways of exposure. The decree includes a directive to clean up visible contamination. Remedial actions to be taken on-site are negotiated between the responsible parties and State and Federal agencies, but the present Consent Decree does not address public health concerns or the means to remediate exposure pathways.

The site contains a spectrum of agents which could cause potential health effects. The chlorinated organic solvents found on-site in soils, groundwater, and recovery wells are present in sufficient concentrations to cause dermatitis with direct contact with skin. Concentrations of several volatile halogenated hydrocarbons, including vinyl chloride, carbon tetrachloride, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethlyene, tetrachloroethylene, 1,2-dichloropropane as well as hexachlorobutadiene, benzene and ethylbenzene have been detected in air in quantities sufficient to cause acute effects. Inhalation of these compounds could cause central nervous system depression, liver and kidney injury and with certain agents, possible cardiac sensitization.

Some of the contaminants, including 1,2-dichloroethane, vinyl chloride, 1,1,2,2-tetrachloroethane, hexachlorobutadiene and benzene are designated as carcinogens. Other potential carcinogens, including hexachlorobenzene and Hexachlorobutadiene which have been found in sediments off-site, have been detected in fish tissue. In addition, there is also the potential for additive effects of the contaminants, particularly the volatile halogenated hydrocarbons which have similar mechanisms of action on the nervous system, kidneys or liver.

hepatoxicity by producing both fatty liver and liver necrosis. Repeated or prolonged skin contact with 1,2-dichloroethane or other chlorinated organic solvents at the concentrations present in the recovery wells, soils, and sediments could cause dermatitis. Chronic exposure to these agents by ingesting groundwater, if used for drinking or inhaling volatilized compounds during remedial activities, could also result in increased risk of cancer.

Trichloroethylene: Trichloroethylene is a central nervous depressant; the depressant effects are proportional to the dose. Observations in humans indicate that no effect was seen at concentrations below 100 ppm; marginal effects at 200 ppm and slight effects above 300-400 ppm. This agent has anesthetic properties; at doses which produce anesthesia, caridac sensitization has been observed. Trichloroethylene is an irritant to eyes and skin. Trichloroethylene is readily metabolized and excreted from the body.

Hexachlorobenzene: Hexachlorobenzene, a halogenated aromatic hydrocarbon, is stable in the environment and will bioaccumulate in organisms (bioaccumulation factor in catfish of 15,000). While hexachlorobenzene is considered to have a low order of acute toxicity, accidental exposures to humans through food products have caused dermal effects including vesicular and bullous disease particularly in areas of the skin exposed to sunlight. Other observed effects include hyperpigmentation, alopecia, loss of body weight, and hepatomegaly. Repeated exposure has caused a vesicular and bullous disease resembling porphyria cutanea tarda.

The effects of exposure to concentrations typically found in the environment are less well defined. Animal studies indicate that hexachlorobenzene could cause an increased risk of cancer. Hexachlorobenzene is not easily metabolized by organisms and is transferred and biomagnified through several food chains, particularly in aquatic environments. The detection of hexachlorobenzene in fish (and potentially in wildlife) poses a potential route for human exposure.

CONCLUSIONS AND RECOMMENDATIONS (BROOKLAWN AND SCENIC SITES)

Conclusions

From the information received, this site is considered a public health concern because risk to human health exists from the likelihood of exposure to hazardous substances. This exposure can occur through inhalation of contaminants by area residents, by industrial workers, and by remedial workers during remedial activities, ingestion of contaminated fish and wildlife, and because of possible contamination of groundwater.

Recommendations

1. Monitoring of off-site groundwater should be conducted in addition to the ongoing monitoring of drinking water for the presence of contaminants on-site. Residential and industrial uses of groundwater should be identified and characterized with respect to hydrogeologic factors and exposure pathways. Remedial activities that specifically target groundwater contamination should be addressed.

2. The off-site migration of contaminants should be characterized, particularly for hexachlorobenzene and other compounds that bioaccumulate following surface-water runoff into Bayou Baton Rouge (at both the Brooklawn and Scenic Sites) and Devil's Swamp Lake. Remedial activities to prevent off-site migration should be investigated.

3. Additional sampling of fish, shellfish, and wildlife (including squirrels, raccoons, rabbits, etc.) should be conducted because of the widespread hunting and fishing in the area.

The following, including demographic characteristics of the area, should be ascertained.

a. Size, location, age, sex, and ethnic distribution, as well as socioeconomic status and occupations of residents of the surrounding area

b. Populations of special risk

c. Land and water uses of the area

d. Location of residential water wells

e. Recreational activities of the area, such as extent and location of fishing, hunting, and water sports (e.g., swimming and water skiing)

4. Air sampling should be continued and expanded.

5. Barren ground should be covered to prevent particle reentrainment by rain or wind and to prevent rainwater percolation.

6. Measures should be taken to prevent further erosion of the Scenic Site bluff by Bayou Baton Rouge.

7. When indicated by public health needs, and as resources permit, the evaluation of additional relevant health outcome data and community health concerns, if available, is recommended.

8. In accordance with the Comprehensive Environmental Response, Compensation, and Liability (CERCLA) of 1980, as amended, the Petro-Processors of Louisiana NPL Site, Scotlandville, East Baton Rouge Parish, Louisiana has been evaluated for appropriate follow-up with respect to health effects studies. Since human exposure to site contaminants may have occurred in the past and may still be occurring, this site is being considered for follow-up health studies. After consultation with regional EPA staff and State and local health and environmental officials, the Division of Health Studies, ATSDR, will determine if follow-up public health actions or studies are appropriate for this site.

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2. TERA Corp., Surface Characterization, Petro-Processors of Louisiana, Inc., January 1983.

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4. Jacobs Environmental, Air Monitoring Data Reports, November and December 1988 [11/02/87, 11/03/87, 11/06/ 87, 11/07/87, 11/09/87, 11/10/87, 11/11/87, 11/12/87, 11/13/87, 11/14/87, 11/15/87, 11/17/87, 11/18/87, 11/19/87, 11/20/87, 11/21/87, 11/22/87, 11/23/ 87, 11/24/87, 11/25/87, 11/27/87, 11/28/87, 11/30/87, 12/1/87, 12/2/87, 12/3/87, 12/4/87, 12/8/87, 12/9/87, 12/10/87, 12/11/87, 12/14/87].

5. Jacobs Environmental, Air Monitoring Data Reports, June 6, 1988, through July 17, 1988.

6. Louisiana Department of Health and Hospitals (LADHH) and Louisiana Department of Environmental Quality (LADEQ), Analysis of Edible Fish Tissue Taken from Devil's Swamp Lake, Louisiana. 1986.

7. NPC Services, Inc., Semiannual On-site Groundwater Monitoring Well Analysis, June 29, 1988.

8. Ecology and Environment, Field Investigation Team Sampling and Analysis of Sediments and Water in the Devil's Swamp Area near the Petro-Processors, Inc. [Brooklawn] Site, 1985.

TABLE I

Petro-Processors of Louisiana, Inc.

BROOKLAWN SITE

On-site Contaminants*

COMPOUNDS	SOIL	GROUNDWATER	AIR
Lead	24-1,100	54	NA
Carbon tetrachloride	.014->610	<.01-14,000	<0.1-102.6
Chloroform	.014-260	<.01-1,000	<0.1-5.16
Vinyl chloride	.01-340	<.01-180	<0.25
1,1-dichloroethane	.014-200	<.01-2,500	<0.1-8.24
1,2-dichloroethane	.12->1,900	<.01-110,000	<0.1-148.0
1,1,1-trichloroethane	.026-75	<.01-1,600	<0.1-88.52
1,1,2-trichloroethane	.02-75,000	<.01-130,000	<0.1-47.11
1,1,2,2,-tetrachloroethane	.094-76,500	<.01-310,000	<0.1-15.06
Hexachloroethane	31-2,820	ND-8,300	<.001-0.219
1,2-trans-dichloroethylene	.01-225	<.01-4,300	<.01-6.29
Trichloroethylene	.022-430	<.01-78,001	<0.1-18.33
Tetrachloroethylene	.092-600	<.01-22,000	<0.1-1.47
1,2-dichloropropane	<.01-720	<.01-18,000	<0.1-96.47
1,2,2,3-tetrachloropropane	.05-1,410	1.9-47.0	NA
1,2,3,4-tetrachlorobutane	.01-.240	ND-3,000	NA
Hexachlorobutene	.1-158	<.01-13,000	NA
Hexachlorobutadiene	.2-7,000	<.01-92,000	<0.0001-1265
Benzene	.1-72	<.01-225	<0.1-4.45
Ethylbenzene	.01-83	<.01-100	<0.1-3.22
Pentachlorobenzene	.1-2,040	ND-9,800	NA
Hexachlorobenzene	.32-2,000	ND	NA
Pyrene	.32-110,000	ND	NA
Toluene	.75-490	<.01-800	<0.1-12.99

* Values given in parts-per-million (ppm)

NA Not analyzed

ND Not detected

TABLE II

Petro-Processors of Louisiana, Inc.

BROOKLAWN SITE

Off-site Contaminants*

COMPOUNDS	SEDIMENT	ANIMAL TISSUE [edible portion]
Carbon tetrachloride	6,800	
Chloroform	1,100	
Vinyl chloride	1,700	
1,1-dichloroethane	1,600	
1,2-dichloroethane	28,000	
1,1,1-trichloroethane	750	
1,1,2-trichloroethane	21,000	
Hexachloroethane	3,300	
1,1-dichloroethylene	320	
1,2-trans-dichloroethylene	3,200	
Trichloroethylene	4,700	
Tetrachloroethylene	6,900	
1,2-dichloropropane	7,900	
Tetrachlorobutadiene	200-300	
Hexachlorobutadiene	300,000	270
Benzene	240	
1,3-dichlorobenzene	14,000	
1,4-dichlorobenzene	380	
1,2,4-trichlorobenzene	6,000	
Hexachlorobenzene	250,000	122
Chlorobenzene	30	
Pentachlorobenzene	ND	24
Toluene	900	
Phenol	140	
4-chloro-3-methylphenol	110	
4-nitrophenol	2,200	
2-methyl-4,6-dinitrophenol	1,200	
Pentachlorophenol	710	
Acenaphthene	590	
Acenapthalene	140	
Anthracene	1,600	
Benzo(a)anthracene	2,400	
Chrysene	2,400	
Fluorene	940	
Fluoranthene	4,200	
Naphthalene	8,700	
Phenanthrene	210,000	
Pyrene	4,800	
Aroclor 1254	1,900	589

* Values given in parts-per-billion (ppb)

ND Not detected

TABLE III

Petro-Processors of Louisiana, Inc.

SCENIC SITE

On-site Contaminants*

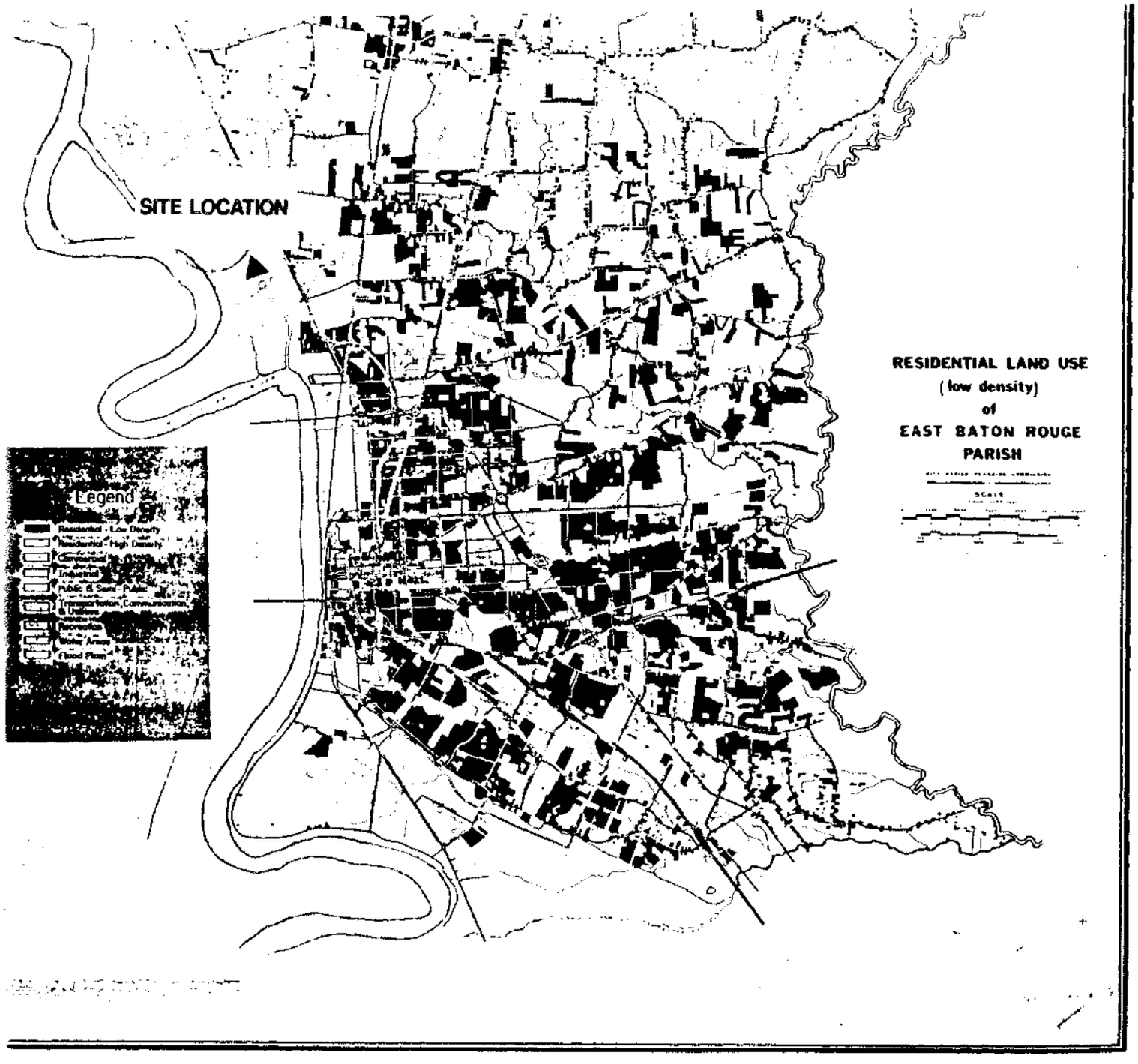
COMPOUNDS	SOIL	WATER	AIR
Carbon tetrachloride	ND-1,200	<1.0	<0.1
Chloroform	<0.001-200	ND	<0.1
Vinyl chloride	<0.01-570	ND-3.3	<0.25
1,2-dichloroethane	0.01-2,800	140	<0.1-0.65
1,1,2-trichloroethane	ND-5.8	32	<0.1
1,1,2,2,-tetrachloroethane	<0.01-34	ND-11	<0.1-1.02
1.2-dichloroethylene	0.55-1,100	ND	NA
Trichloroethylene	0.02-730	ND	<0.1
Tetrachloroethylene	0.13-970	ND	<0.1
1,2-dichloropropane	0.04-1,200	ND-30	<0.1-0.27
Hexachlorobutadiene	0.02-9,400	ND	<0.001-2.17
Benzene	ND-38	ND	<0.1
Ethylbenzene	<10-83	ND	<0.1
Pentachlorobenzene	5.5-137	ND	NA
Hexachlorobenzene	<0.2-1,400	ND	<0.001
Toluene	ND-13	ND	<0.1
Naphthalene	ND-100	ND	<0.25

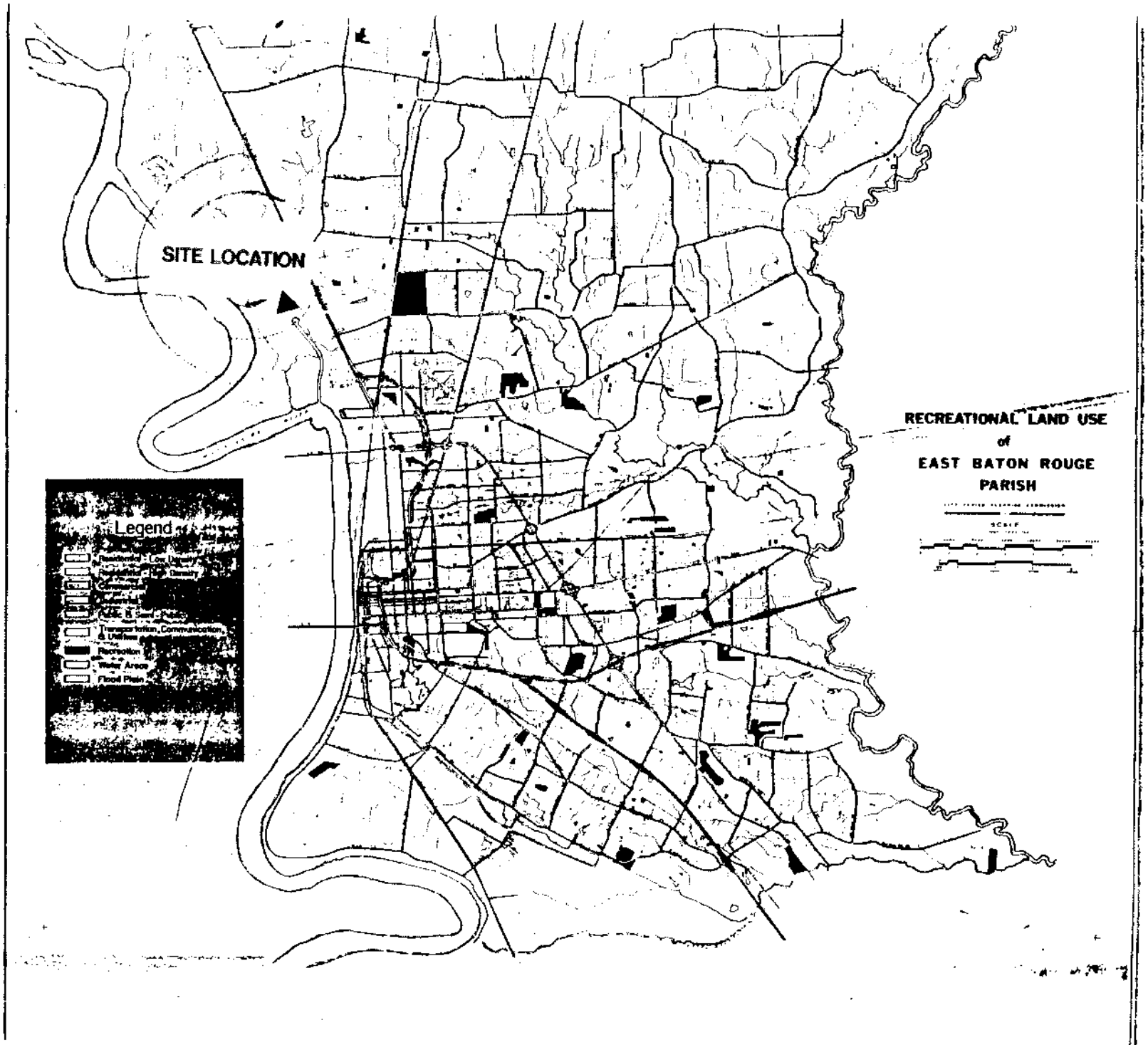
* Values given in parts per million (ppm)

NA Not analyzed

ND Not detected

REFERENCE 23


SITE LOCATION
Legend
RESIDENTIAL LAND USE
(low density)
of
EAST BATON ROUGE
PARISH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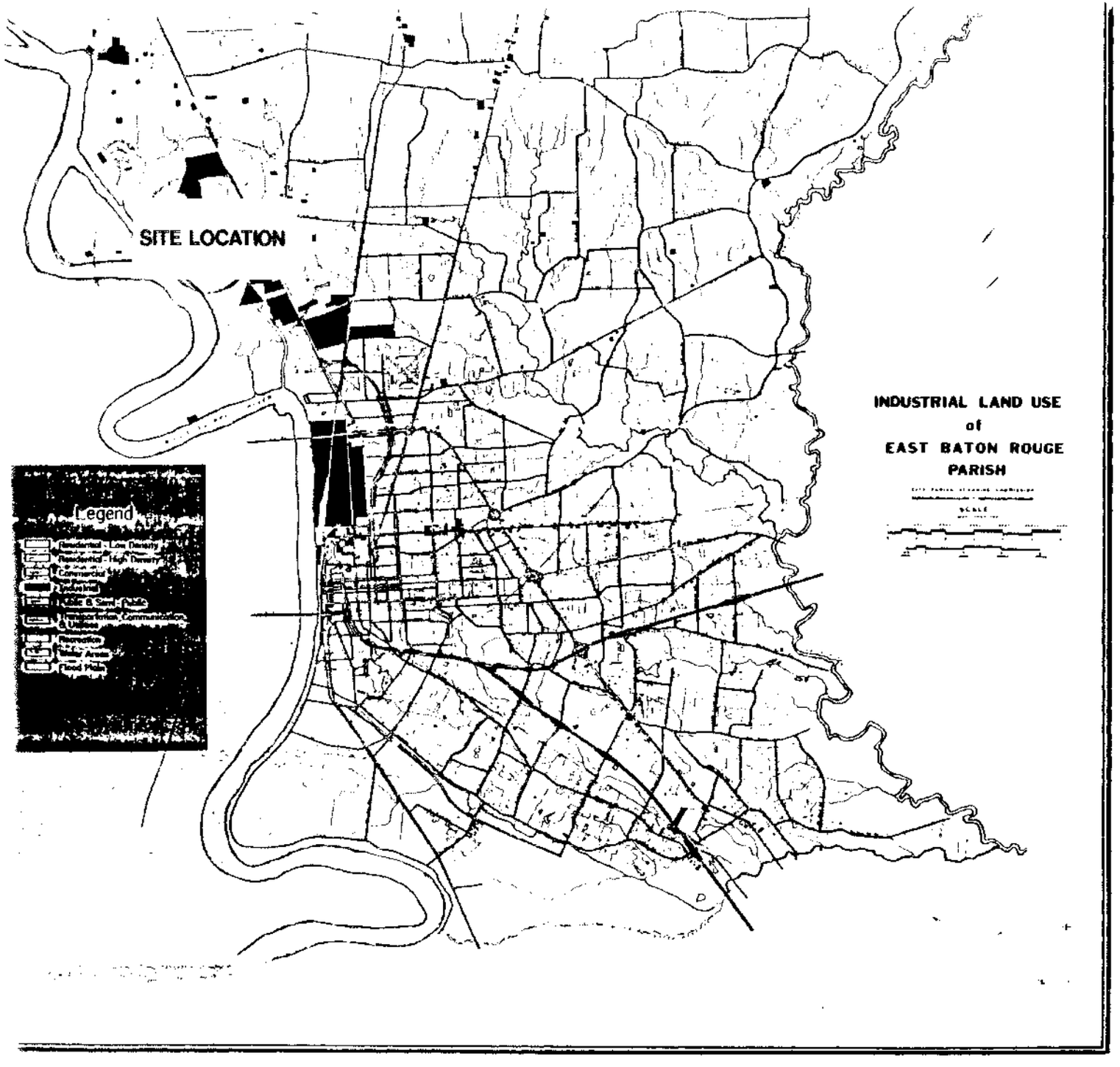
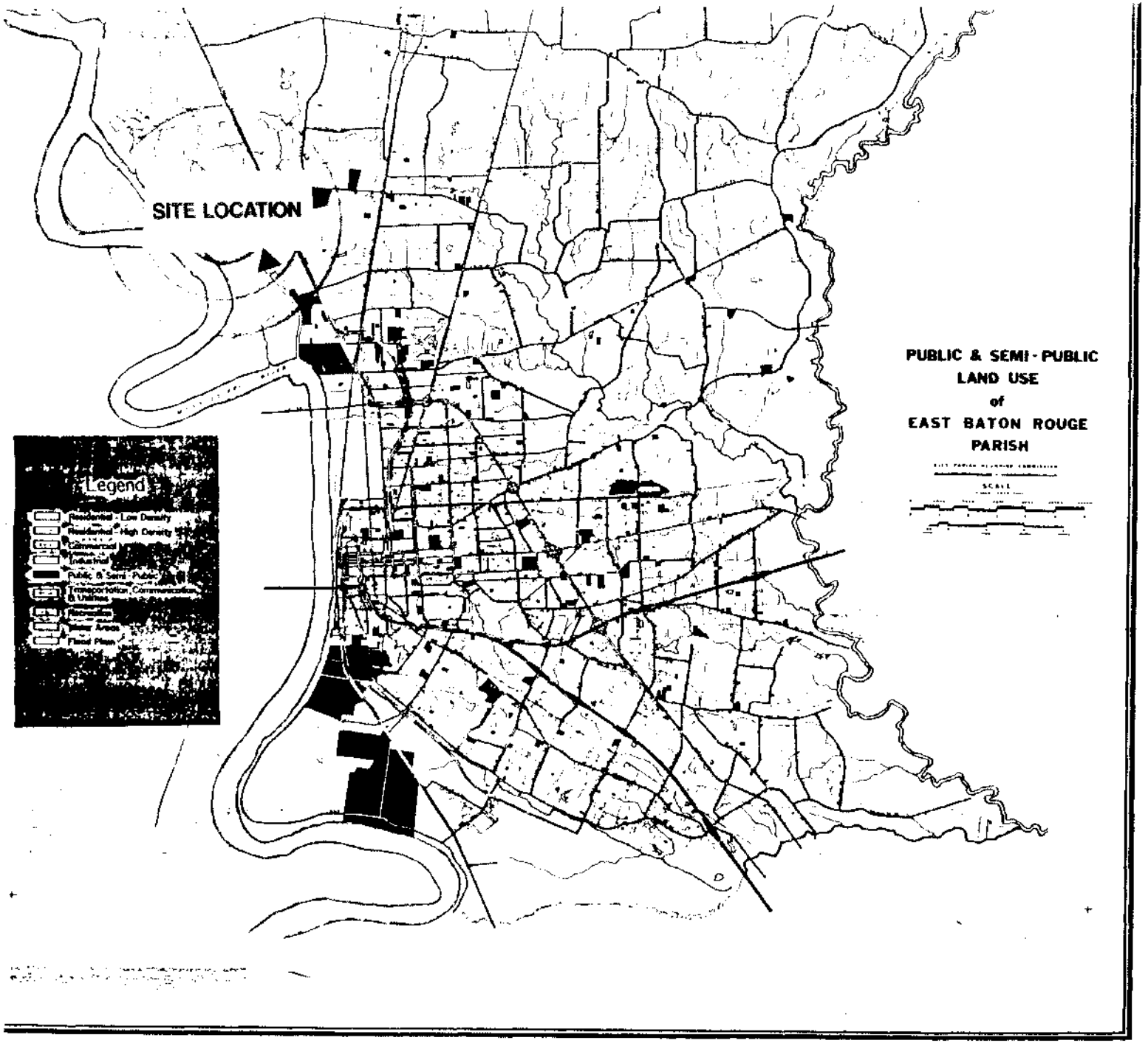
RECREATIONAL LAND USE
of
EAST BATON ROUGE
PARISH
Legend
Transportation, Communication, & Utilities
Recreation
Water Areas
Flood Plain


SITE LOCATION
Legend
INDUSTRIAL LAND USE
of
EAST BATON ROUGE
PARISH


SITE LOCATION
Legend
PUBLIC & SEMI - PUBLIC
LAND USE
of
EAST BATON ROUGE
PARISH
SCALE

REFERENCE 24

RECORD OF COMMUNICATION

Reference 24

TYPE: Telephone Call **DATE:** 02-11-92 **TIME:** 1:30 p.m.

TO: Leroy White
Assisstant Superintendent
City of Baker Water Utilities
504-775-5584

FROM: Jeffrey E. Patterson
ICF Technology, Inc.
Dallas, Texas
214-979-3946

SUBJECT: City of Baker Water Wells

SUMMARY OF COMMUNICATION:

Mr. White described the City of Baker wells as; one on Groom Road, East of Mcque at 2300 feet, one on Debra Road at 2400 feet, one on Mississippi road at 2400 feet and one on Levey Lane at 2400 feet deep. The wells are mixed within a "loop" system. There is no way to determine how many connections each well serves. The system serves about 12,000 people within the City of Baker. There are some more connections outside the city limits, but he did not know how many they served. The service boundaries are primarily the city limits of Baker.

REFERENCE 25

RECORD OF COMMUNICATION

Reference 25

TYPE: Telephone Call **DATE:** 02-11-92 **TIME:** 1:50 p.m.

TO: Karen Dibenedetto
Engineering Department
Baton Rouge Water Company
504-928-1000

FROM: Jeffrey E. Patterson
ICF Technology, Inc.
Dallas, Texas
214-979-3946

SUBJECT: Baton Rouge Water System

SUMMARY OF COMMUNICATION:

Ms. Dibenedetto confirmed that Baton Rouge is served by 53 wells. The two pump stations most near North Baton Rouge and the Baton Rouge Harbor Turning Basin are one on Southern Univeristy and one on Robin Street, 1/2 mile east of Southern University. She said that the one on Southern Univeristy is actually owned by the univeristy and is leased from them. There are three wells at the Robin Street pump station and one on the university. She said that the Parish Water Company serves rural areas to the north of Baton Rouge including the zoo. She said Baton Rouge Water Company serves about 85,000 connections. She said that water from all the wells are mixed within the system. The service boundaries are the city limits of Baton Rouge.

REFERENCE 26

RECORD OF COMMUNICATION

Reference 26

TYPE: Telephone Call **DATE:** 02-11-92 **TIME:** 1:59 and 3:25 p.m.

TO: Mr. Mitchell and Liz Hudson
Parish Water Company
504-261-0104

FROM: Jeffrey E. Patterson
ICF Technology, Inc.
Dallas, Texas
214-979-3946

SUBJECT: Parish Water Company Wells

SUMMARY OF COMMUNICATION:

Mr. Mitchell and Ms. Hudson told me that the Parish Water Company has a total of 21 wells, three of which are located in the Scenic Highway area. One is on Scenic Highway at the corner of Old Rafemeyer Road. It is 2000 feet deep. A 1300 foot well is located on Greely Road north of Old Rafemeyer Road. A closed well is located on Rafemeyer Road. A third active well is located across Thomas Road from the zoo on Layton Avenue, which is 2400 feet deep. They serve the Baton Rouge Zoo and Alsen Heights, but do not serve the State Industrial School for Boys(at least not under that name). The water is mixed in the system. They serve a population of 22,100 people. Their boundaries in the south are Baton Rouge city limits and in the north they are Springfield Road. They do not serve the City of Baker.

REFERENCE 27

Ref 27

CAPITAL AREA GROUND WATER CONSERVATION COMMISSION

P.O. BOX 64526

BATON ROUGE, LOUISIANA 70896

QUARTER - JANUARY 1989, FEBRUARY 1989, MARCH 1989

USER NAME - BATON ROUGE WATER COMPANY

ADDRESS - 8755 GOODWOOD BLVD, P.O. BOX 64808, BATON ROUGE, LA 70896

PARISH - EAST BATON ROUGE

USER DESCRIPTION- PUBLIC SUPPLY

	USGS NO	OWNERS NO.		WELL DEPTH IN FEET	TOTAL PUMPAGE, BY MONTH IN THOUSAND GALLONS			COMMENT
					JAN 1989	FEB 1989	MAR 1989	
1)	EB-523	BANKSTON	001	1206	1,110	1,177	1,517	
2)	EB-653	BANKSTON	002	1153	8,654	11,388	19,773	
3)	EB-654	BANKSTON	003	2382	1,211	952	2,738	
4)	EB-756	BANKSTON	005	1168	49,692	45,029	45,297	
5)	EB-769	BANKSTON	006	2369	29,467	30,121	28,625	
6)	EB-928	BANKSTON	007	2383	1,811	1,382	2,133	
7)	EB-1149	CONVENTION	001	2738	66,511	57,403	62,292	
8)	EB-1150	CONVENTION	002	2260	37,955	36,222	38,701	
9)	EB-632	CORTANA	001	1060	27,024	26,082	21,381	
10)	EB-772	CORTANA	002	1216	9,126	11,545	5,273	
11)	EB-873	CORTANA	003	1898	29,138	21,250	46,377	
12)	EB-878	CORTANA	004	2190	2,077	9,391	2,333	
13)	EB-961	CORTANA	005	1548	50,316	45,571	47,058	
14)	EB-151	GOVERNMENT	002	2658	43,610	39,192	41,869	
15)	EB-413	GOVERNMENT	003	1745	37,345	35,101	37,072	
16)	EB-733	GOVERNMENT	005	2637	45,316	45,059	48,085	
17)	EB-771	GOVERNMENT	006	1755	39,250	35,258	37,568	
18)	EB-1035	GREENRIDGE	002	0985	25,716	25,540	27,198	
19)	EB-1036	INTERSTATE	001	0555	58,788	56,835	63,382	
20)	EB-1039	INTERSTATE	002	2710	39,198	35,528	39,668	

					JAN 1989	FEB 1989	MAR 1989
21)	EB-444	LAFAYETTE	014	2174	5,400	5,946	3,965
22)	EB-630	LAFAYETTE	015	2253	5,095	20,816	22,022
23)	EB-510	LULA	017	1605	44,863	38,484	56,465
24)	EB-657	LULA	018	1612	34,904	29,002	23,689
25)	EB-658	LULA	019	1604	50,148	45,716	47,624
26)	EB-726	LULA	020	1604	46,814	42,705	44,806
27)	EB-814	LULA	021	2169	41,697	36,723	40,940
28)	EB-938	LULA	022	1621	49,016	44,228	46,077
29)	EB-939	LULA	023	1595	35,815	32,937	34,452
30)	EB-751	N. 45TH	001	2596	2,553	8,262	3,075
31)	EB-774	N. 45TH	002	2145	10,400	6,083	16,085
32)	EB-927	N. 45TH	003	1516	2,718	5,246	1,751
33)	EB-926	N. SHARP	001	1015	24,487	21,514	31,645
34)	EB-1123	N. SHARP	002	0982	23,980	24,784	19,064
35)	EB-813	O.L.O.L.	001	2585	12,946	1,736	9,957
36)	EB-874	O.L.O.L.	002	2262	23,341	14,658	26,973
37)	EB-925	ONEAL LANE	001	1473	1,510	2,051	1,490
38)	EB-1135	ONEAL LANE	002	1090	20,112	18,152	19,221
39)	EB-584	RIDGECREST	001	1414	1,161	1,657	791
40)	EB-1003	RIDGECREST	002	1441	9,323	6,365	16,612
41)	EB-1004	RIDGECREST	003	2643	45,952	42,892	48,915
42)	EB-773	ROBIN ST.	001	1413	37,509	32,895	9,754
43)	EB-798	ROBIN ST.	002	2649	3,319	2,081	21,197
44)	EB-828	ROBIN ST.	003	1934	37,595	36,900	46,496
45)	EB-750	SOUTHERN	001	2648	470	2,180	15,807
46)	EB-990	STAN AUBIN	001	1465	2,201	844	1,978
47)	EB-991B	STAN AUBIN	002	0569	39,828	39,742	41,058
48)	EB-1017C	STUMBERG	001	0574	13,468	9,427	17,129
49)	EB-1016B	TOULON	001	1468	17,166	12,545	21,073
50)	EB-1025	TOULON	002	2678	2,995	1,902	2,174
51)	EB-621	WESTMIN.	001	1490	6,350	3,845	7,127

	JAN 1989	FEB 1989	MAR 1989
TOTAL PUMPAGE, BY MONTH	1,256,451	1,162,344	1,317,752
TOTAL PUMPAGE, FOR QUARTER IN THOUSANDS OF GALLONS	3,736,547		

PERSON COMPLETING FORM ----------

TITLE ----------

PHONE ----------

INSTRUCTIONS- GIVE PUMPAGE BY WELL
CHARGES - $1.50 PER MILLION GALLONS

IMPORTANT- PLEASE RETURN THIS FORM WITH CHECK

FOR COMMISSION USE ONLY

CHECK NO. ---------- RECEIVED ----------

AMOUNT ---------- DATED ----------

MGD ---------- PUNCHED ----------

BATON ROUGE WATER COMPANY
Well Information as of February 1, 1988

Bankston Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
03-BR	# 1	1200'	1206'	1000
	# 2	1200'	1153'	1000
	# 3	2400'	2382'	1000
	# 5	1200'	1168'	1000
	# 6	2400'	2369'	1000
	# 7	2400'	2383'	1000

Cortana Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
13-BR	# 1	1000'	1060'	1000
	# 2	1000'	1216'	1000
	# 3	1700'	1898'	1000
	# 4	2000'	2190'	1000
	# 5	1500'	1548'	1000

Convention Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
10-BR	# 1	2400'	2730'	2000
	# 2	2000'	2230'	1000

Govt. St. Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
12-BR	# 2	2000' & 2600'	2658'	1000
	# 3	1500'	1745'	1000
	# 5	2000' & 2600'	2637'	1000
	# 6	1500'	1755'	1000

Greenridge Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
04-BR	# 2	1000'	985'	1000

Interstate 12

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
18-BR	# 1	400'	555'	1000
	# 2	2400'	2710'	1000

Lafayette Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
09-BR	#14	2000'	2174'	1000
	#15	2000'	2253'	1000

Lula Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
07-BR	#17	1500'	1605'	1000
	#18	1500'	1612'	1000
	#19	1500'	1604'	1000
	#20	1500'	1604'	1000
	#21	2000'	2169'	1000
	#22	1500'	1621'	1000
	#23	1500'	1595'	1000

O.L.O.L. Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
06-BR	# 1	2400'	2585'	1000
	# 2	2000'	2262'	1000

O'Neal Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
16-BR	# 1	1200'	1473'	1000
	# 2	600' & 800'	1090'	1000

N. 45th Street Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
08-BR	# 1	2400'	2596'	1000
	# 2	2000'	2145'	1000
	# 3	1500'	1516'	1000

Robin Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
02-BR	# 1	1500'	1413'	1000
	# 2	2800'	2649'	1000
	# 3	2000'	1934'	1000

South 17th Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
11-BR	# 1	2000'	2295'	1000

N. Sharp Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
05-BR	# 1	1000'	1015'	1000
	# 2	1000'	983'	1000

Ridgecrest Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
15-BR	# 1	1200'	1414'	1000
	# 2	1200'	1441'	1000
	# 3	2400'	2643'	1000

Sherwood Forest Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
14-BR	# 1	1200'	1374'	1000

So. University Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
01-BR	# 1	2800'	2648'	1000

Stanley Aubin Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
20-BR	# 1	1200'	1465'	1000
	# 2	400'	569'	1000

Stumberg Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
21-BR	# 1	400'	574'	1000

Toulon Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
17-BR	# 1	1200'	1465'	1000
	# 2	2400'	2678'	1000

Westminster Pump Station

Map Key	Well No.	Sand	Total Depth	Well Capacity (GPM)
19-BR	# 1	1200'	1490'	1000

Summary of District Pumpage, January-June, 1987

First Quarter	Public Supply	Industry	Total
1987	**59.636**	**68.449**	**128.085**
1986	59.992	62.254	122.246
Second Quarter			
1987	**63.068**	**70.518**	**133.586**
1986	62.155	69.025	131.180

As indicated in table, pumpage totals for the first two quarters of 1987 are running slightly ahead of pumpage for the first two quarters of 1986. Most of the increase is related to expanded production in the industrial sector.

BATON ROUGE WATER COMPANY

February 22, 1988

PUMPAGE REPORT

At present we are operating 53 wells as follows:

SAND	NO. OF WELLS	OUTPUT IN GPM	OUTPUT IN MGD
400'	3	3,280	4.72
800'	1	1,090	1.57
1000'	5	5,900	8.50
1200'	10	8,872	12.76
1500'	11	11,125	17.31
1700'	1	1,126	1.62
2000'	11	11,195	16.12
2400'	9	11,218	16.15
2800'	2	2,036	2.93
	53	**56,850**	**81.90**

WELLS PUT IN SERVICE - 1987

Well	Depth	Rated Output in GPM	Output in MGD
Convention #1	2,730	2,000	2.880
Convention #2	2,230	1,000	1.440

Average Daily Pumpage	Maximum Day
1976 - 37,536,691 Gallons	1976 - 52,252,400 Gallons - August 22
1977 - 37,500,643 Gallons	1977 - 52,087,000 Gallons - January 19
1978 - 39,980,788 Gallons	1978 - 50,744,000 Gallons - November 5
1979 - 41,543,418 Gallons	1979 - 58,606,000 Gallons - July 4
1980 - 40,981,731 Gallons	1980 - 54,275,000 Gallons - August 24
1981 - 42,546,833 Gallons	1981 - 56,094,000 Gallons - August 16
1982 - 43,781,833 Gallons	1982 - 65,090,000 Gallons - January 13
1983 - 44,500,000 Gallons	1983 - 75,000,000 Gallons - December 26
1984 - 45,593,000 Gallons	1984 - 56,043,000 Gallons - June 28
1985 - 45,324,000 Gallons	1985 - 69,782,000 Gallons - January 22
1986 - 42,982,000 Gallons	1986 - 52,195,000 Gallons - May 5
1987 - 43,214,500 Gallons	1987 - 58,646,000 Gallons - September 15

PARISH WATER COMPANY
Well Information as of February 11, 1988

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
		Blackwater Road			
04-P	S/E Corner of Hwys. 64 and 410	#1	2800	2211'	750
		Forest Glen			
14-P	6121 Donnybrook Dr	#1	2400	2343'	1000
		Foster Road			
09-P	11261 Foster Road	#1	2800	2600'	1000
		Hooper Road			
10-P	S/S Hooper Road, 1/4 mile E of Lovett Rd.	#1	2800	2682'	300
		Jackson Road			
02-P	N/S Jackson Rd, 1/2 mile W of Reames Rd	#1	2800	1943'	750
		Joor Road #2			
11-P	9232 Joor Road	#1	2800	2748'	1000
		Kleinpeter			
08-P	S/S, 5700 Block of Kleinpeter Rd.	#11	2800	2461'	500
		Liberty Road			
03-P	W/S Hwy 409,900'N of Peairs Rd	#1	2800	2054'	750
		Mickens Road			
13-P	Behind 6233 Mickens Rd	#1	2800	2557'	750
		Ole McDonald			
12-P	S/E corner Wax Rd & Brookside Drive	#1	2000	1902'	1000
	S/E corner Wax Rd & Brookside Dr.	#2	2800	2700'	800
		Plank Road #1			
07-P	12418 Plank Road	#1	2800	2449'	500

Plank Road #2

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
01-P	W/S Plank Rd 1/2 mile S Pride-Pt Hudson Rd	#1	2800	2005'	750

Ridgewood

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
15-P	S/E corner Mapleton & Goodland	#1	1500	1383'	200

St. Irma Lee

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
06-P	S/S Dillard, 200'W of St. John Lane	#1	1300	1370'	200

Shenandoah

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
18-P	W/S Jones Creek Rd behind Woodland Baptist Church	#1	600	665'	1000

Sherrington

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
05-P	15226 Beauford Drive	#1	2400	1998'	1000

Weiner

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
16-P	Tollway Dr., 1/4 Mile E of Stumberg Lane	#1	600	586'	1200

White Oak Landing

Map Key	Approximate Location	Well No.	Sand	Total Depth	Well Capacity (GPM)
17-P	E/S Woodlake Drive @	#1	600	912'	1000

BATON ROUGE WATER COMPANY'S FACILITIES

FACILITY	STREET ADDRESS	LOCATION
BANKSTON P.S.	* 5744 Maplewood Drive	W side; S of Laca St.
BLUEBONNET TANK	7912 Bluebonnet Lane	W side; S of Perkins Rd.
CLOVERLAND TANK	11777 Cloverland Avenue	N side at Benefit Dr.
CONVENTION P.S.	130 North 12th Street	E side; B/T Convention St. & N Blvd.
CORTANA EAST P.S.	645 Oak Villa Boulevard	W side; S of Mallway Ave.
CORTANA WEST P.S.	8487 Airline Highway	E side; S of Florline Blvd.
GOODWOOD CONTROL/OFFICE	8755 Goodwood Boulevard	NE corner at Market Cross Roads
GOVERNMENT SOUTH P.S.	4601 Government Street	N side at Mouton Dr.
GOVERNMENT NORTH P.S.	4601 Government Street (Rear)	Dead end of Hanson Dr.
GREENRIDGE P.S.	11087 Greenwell Springs Road	NW corner at W Greenridge Dr.
HIGHLAND TANK	5400 Highland Road	SW corner at BenHur Rd.
I-12 P.S.	10438 Daradelle Avenue	S side at dead end; W of church
LAFAYETTE P.S.	118 North 1st Street	E side; B/T N Blvd. & Convention St.
Well Site #14	222 Front Street	E side; N of Convention St.
LAFAYETTE RESERVOIR	131 Lafayette Street	W side; B/T N Blvd. & Convention St.

FACILITY	STREET ADDRESS	LOCATION
LULA WEST P.S./METER SHOP	3016 Jefferson Avenue	S side; Block B/T N 30th & N 31st & Jefferson Ave. & Lula Ave.
Reservoir Site	1655 North 32nd Street	W side; B/T Jefferson Ave. & Lula Ave.
Well Site #17	1703 North 32nd Street	W side; S of Jefferson Ave.
Well Site #18	1715 North 30th Street	W side; S of Jefferson Ave.
Well Site #19	1594 North 32nd Street	E side at Lula Ave.
LULA EAST P.S.	1641 North 35th Street	W side; B/T basketball courts & school.
Well Site #23	1731 North Acadian Thruway East	W side; S of Washington Ave.
LULA 21 P.S.	1740 North 35th Street	E side at dead end
MARGARET TANK	1420 Napoleon Street	W side; N of Margaret St.
NORTH 45TH P.S.	675 North 45th Street	W side; N of North St.
NORTH SHARP P.S.	3893 North Sherwood Forest Drive	W side; N of Toledo Bend Ave. on service road
O'NEAL LANE P.S.	2415 O'Neal Lane	E side at Firewood Dr.
O.L.O.L. P.S.	1982 North 4th Street	E side; North Dort Ave.
OPERATIONS & MAINTENANCE CENTER	2520 Souter Drive	NE corner at S. Choctaw Dr. across tracks

FACILITY	STREET ADDRESS	LOCATION
PERKINS TANK	3831 Perkins Road	E side; N of Balis Dr.
PRESCOTT TANK	3720 Prescott Road	S side at Maple Dr.
RIDGECREST P.S.	12541 Old Hammond Highway	N side; E of Elwick Dr.
ROBIN P.S.	1745 Robin Street	NE corner at Thelma St.
SHERWOOD FOREST P.S.	12045 Mollylea Drive	N side; E of Westbrook Dr.
SOUTH 17TH P.S./TANK	286 South 17th Street	W side at Louisiana Ave.
SOUTHERN UNIVERSITY P.S.	S.U. Campus, Street K	N side at end of Street K
STANLEY AUBIN P.S.	10731 Stanley Aubin Lane	N side at Weiner Creek Dr.
STUMBERG P.S.	5344 Stumberg Lane	W side; S of Jacks Bayou Bridge
TEXAS TANK	2828 Thomas H. Delpit Drive	W side; B/T East Garfield St. & East Roosevelt St.
TOULON P.S.	2617 Toulon Drive	E side; in curve N of St. Tropez Avenue
WESTMINSTER P.S.	8800 Blk of Jefferson Highway	S side at Drusilla Lane & I-12

2. Targets - As I explained above, the HRS model defines aquifers as water-bearing sand as an aquifer. For this site, the aquifer of concern is the "first-water sand." Therefore, only the population which uses water drawn at that depth can count as targets for the HRS score. The Louisiana Training Institute for Boys, for example, is serviced by two drinking water wells that do not count on the population to the score. We believe that an accurate count of population served by the first-water sand was scored. The sampling error which you note is very minor and does not raise the score above the "1" cut-off.

Surface Water Work Sheet - Your comments related to the adequacy of the model to assess risk to surface water are noted. However, as to the items detailed above, the score is correct. Many of your points are, in fact, criticisms of the HRS model as it is presently designed and applied nationwide. Those concerns should be addressed to Harold J. Snyder, Chief, Discovery and Investigation Branch, EPA Headquarters. It should be remembered, the HRS model may be modified in response to limitations identified during previous applications to specific sites.

Air Route Work Sheet - During the sampling mission in February 1985, the Organic Vapor Analyzer (OVA) was used to detect levels of contamination. You are correct that the OVA is not the most precise instrument available for measuring air contamination, however, it is an effective indicator of whether more precise equipment would quantify a release. Your correlation of a strong odor as an indicator of an air release is incorrect: odors may or may not be related to harmful contaminants. There were areas in the swamp where background readings were elevated to 2 ppm - 3 ppm. This deviation could be natural background, and if so, would not be significant enough to be attributed to contamination. It should be noted that these are very minor deflections and only prompts the operator to monitor the area closer and check proper OVA operation. During the sampling mission, the only significant readings observed on the OVA were noted after the surface was broken.

In conclusion, we believe that the score assigned to this site correctly reflects its relative risk to human health and the environment. Although there are some contaminants at the site, it does not qualify under the Congressionally mandated priority system for remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. It is our understanding that the Louisiana Department of Environmental Quality is planning to post the property to warn persons who would potentially be exposed any hazard.

If you have any further questions, please let me know.

Sincerely,

Martha H. McKee, Chief
Superfund Site Assessment Section

cc: Bill DeVille (LDEQ)
Harold Snyder (HSCD/DIB)

bcc: Fontenot (6E-EF)

REFERENCE 28

RECORD OF COMMUNICATION

Reference 28

TYPE: Telephone Call **DATE:** 02-11-92 **TIME:** 3:20 p.m.

TO: Baton Rouge Library
Reference Department

FROM: Jeffrey E. Patterson
ICF Technology, Inc.
Dallas, Texas
214-979-3946

SUBJECT: Population of Baton Rouge

SUMMARY OF COMMUNICATION:

I was told that the population of Baton Rouge in 1991 was 219,531.

REFERENCE 29

Ref #4

GROUND-WATER CONDITIONS IN THE BATON ROUGE AREA, 1954-59

With Special Reference To Increased Pumpage

WATER RESOURCES BULLETIN NO. 2

Pu
DEPARTMENT OF CONSERVATION
LOUISIANA GEOLOGICAL SURVEY
LOUISIANA DEPARTMENT OF PUBLIC WORKS
Baton Rouge, La.
Dec

STATE OF LOUISIANA
DEPARTMENT OF CONSERVATION
GEOLOGICAL SURVEY
and
DEPARTMENT OF PUBLIC WORKS

In cooperation with the
UNITED STATES GEOLOGICAL SURVEY

Water Resources Bulletin No. 2

GROUND-WATER CONDITIONS IN THE BATON ROUGE AREA, 1954-59

WITH SPECIAL REFERENCE TO INCREASED PUMPAGE

by

C. O. MORGAN

Geologist, U. S. Geological Survey

Published by
DEPARTMENT OF CONSERVATION
LOUISIANA GEOLOGICAL SURVEY
and
LOUISIANA DEPARTMENT OF PUBLIC WORKS
Baton Rouge, La.
December 1961

STATE OF LOUISIANA

JIMMIE H. DAVIS, *Governor*

DEPARTMENT OF CONSERVATION

JAMES H. GILL, *Commissioner*

THOMAS M. WINFIELE, *Chief Engineer*

LOUISIANA GEOLOGICAL SURVEY

LEO W. HOUGH, *State Geologist*

CLARENCE O. DURHAM, *Director of Research*

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Cooperative projects with

UNITED STATES GEOLOGICAL SURVEY

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L. B. LEOPOLD, *Chief Hydraulic Engineer*

O. M. HACKETT, *Chief, Ground Water Branch*

R. R. MEYER, *District Geologist*

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LOUISIANA GEOLOGICAL SURVEY
and
LOUISIANA DEPARTMENT OF
PUBLIC WORKS
In cooperation with the
UNITED STATES GEOLOGICAL SURVEY
Baton Rouge, Louisiana

GROUND-WATER CONDITIONS IN THE BATON ROUGE AREA, 1954-59 With Special Reference To Increased Pumpage

By C. O. Morgan

WATER RESOURCES BULLETIN NO. 2 December 1961

ABSTRACT

In the Baton Rouge area large quantities of fresh ground water are available from 12 aquifers ranging in age from Pleistocene to Miocene. These aquifers, which are named by their depth of occurrence in and near the Baton Rouge industrial district, are: alluvial deposits, shallow Pleistocene deposits, "400-foot" sand, "600-foot" sand, "800-foot" sand, "1,000-foot" sand, "1,200-foot" sand "1,500-foot" sand, "1,700-foot" sand, "2,000-foot" sand, "2,400-foot" sand, and "2,800-foot" sand. The deepest aquifer, the "2,800-foot" sand, contains fresh water to a maximum of 3,100 feet below mean sea level in the eastern part of the area.

In 1959, pumpage for industrial and public supply uses averaged 93 million gallons per day, which is 43 percent more than that pumped in 1953. The average yield of industrial and public-supply wells is 1,000 gallons per minute. The increase in pumpage, which was from aquifers below the "600-foot" sand, primarily has caused a lowering of water levels in the deeper sands. However, decreased pumpage from the "400- and 600-foot"

sands has caused a recovery of water levels in the shallow aquifers.

In addition, pumpage from all aquifers has caused the northward movement of salt water toward areas of heavy pumping. The exact location of and rate of movement of the salt-water interface in each aquifer has not been determined. The only noticeable migration of salt water has occurred in the "600-foot" sand. Analyses of water from wells south of the industrial district and screened in the "600-foot" sand show an increase in chloride content.

The soft, sodium bicarbonate water in aquifers below the "shallow Pleistocene" aquifer generally can be used without treatment for most purposes.

INTRODUCTION

LOCATION AND GENERAL FEATURES OF THE AREA

The project area (fig. 1) includes East Baton Rouge and West Baton Rouge Parishes and is a modification of the Baton Rouge area as used by Meyer and Turcan (1955, p. 2-3), which included most of East Baton Rouge Parish and small parts of West Baton Rouge and East Feliciana Parishes. The Baton Rouge area is in southeastern Louisiana, which geographically is in the Gulf Coastal Plain (Fenneman, 1938, p. 68). Bordering parishes are East Feliciana and West Feliciana to the north, Pointe Coupee and Iberville to the west, Iberville and Ascension to the south, and Livingston and St. Helena to the east. East Baton Rouge and West Baton Rouge Parishes contain a total of 663 square miles and have a maximum north-south length of 27 miles and a maximum east-west dimension of 37 miles. They are between lat. 30°15′ and 30°45′ north and long. 90°50′ and 91°30′ west.

The Baton Rouge industrial district (pl. 3) is the area bounded on the east by Scenic Highway, on the south by Choctaw Drive, on the west by the Mississippi River, and on the north by an east-west line about 0.4 mile north of Airline Highway.

According to the Bureau of the Census, the population of East Baton Rouge Parish increased from 158,236 in 1950 to 230,058 in 1960, and that of West Baton Rouge Parish increased from 11,738 in 1950 to 14,796 in 1960. The largest city in the area is Baton Rouge, which is the State capital and the home of Louisiana State University.

PURPOSE AND SCOPE

In response to numerous requests for information on the availability of fresh ground water in and near Baton Rouge, the U.S. Geological Survey, as a part of the statewide cooperative program with the Louisiana Department of Public Works and the Louisiana Geological Survey, Department of Conservation, has reanalyzed and corrected ground-water data previously assembled and has analyzed new information obtained during the period 1958-59. Since 1953 the Baton Rouge area has been the center of a major

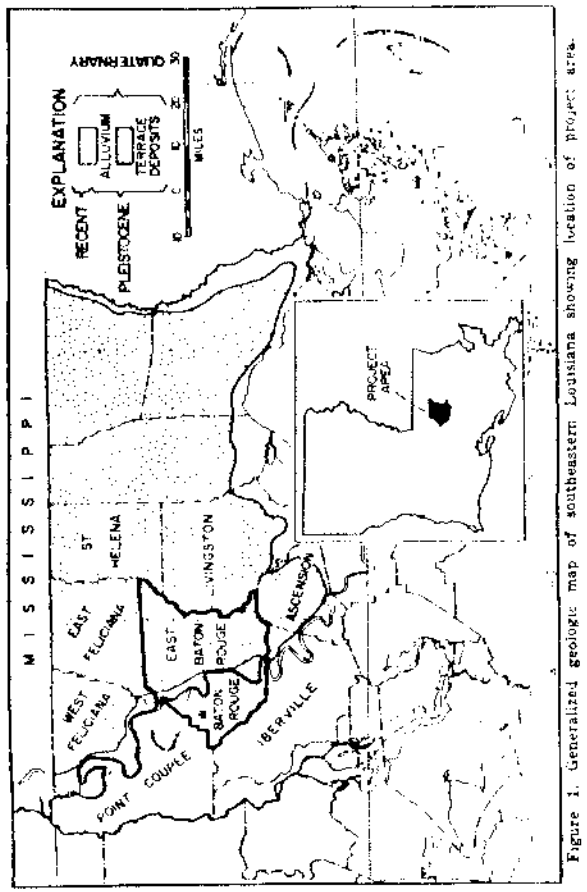


Figure 1. Generalized geologic map of southeastern Louisiana showing location of project area.

industrial expansion in the lower Mississippi River valley. Expansion of existing industries, influx of new industries, and rapid growth of population have caused concern in this area where large quantities of ground water are pumped. It is the purpose of this report to present to the ground-water users new and reanalyzed data that will provide a practical framework for the proper development of this natural resource.

The report augments U.S. Geological Survey Water-Supply Paper 1296, entitled "Geology and Ground-Water Resources of the Baton Rouge Area, Louisiana." Some of the basic and interpretive data in previous reports are repeated but reanalyzed; chemical analyses of the water, evaluation of the hydraulic characteristics of the aquifers, and hydrographs are brought up to date. A fence diagram (pl. 1) is included to show the water-bearing formations that underlie the area. Maps show the location of wells in the area and the density of wells, by aquifer, in the industrial district.

PREVIOUS INVESTIGATIONS

The ground-water resources, geology, geography, and climate of the Baton Rouge area have been described in previous reports. In 1905, a report by G. D. Harris on underground water in southern Louisiana listed the depth of wells, quality of water, and flow of wells in East Baton Rouge Parish at that time. In 1945, E. M. Cushing and P. H. Jones wrote a progress report entitled "Ground-Water Conditions in the Vicinity of Baton Rouge," which was published by the Louisiana Department of Public Works. This report discussed briefly the geology and ground-water hydrology of the area. A more detailed report, entitled "Geology and Ground-Water Resources of the Baton Rouge Area, Louisiana," by Meyer and Turcan was published in 1955 as Water-Supply Paper 1296. In it the authors named the principal aquifers of the area and determined the withdrawals of water and their effect on water levels. Coefficients of transmissibility and storage and data on the quality of water in most of the sands also were presented.

ACKNOWLEDGMENTS

Valuable data and assistance used in the preparation of this report were received from individuals, industries, and governmental agencies, both State and Federal.

Data on pumpage and well construction were provided by Consolidated Chemical Industries, Inc., Copperweld Corp., Corps of Engineers, U.S. Army, Esso Standard Oil Co., Ethyl Corp., Foster Grant Co., Inc., General Chemical Division, and Solvay Process Division of the Allied Chemical & Dye Corp., W. R. Grace & Co., Gulf States Utilities Co., Ideal Cement Co., Kaiser Aluminum & Chemical Corp., Naugatuck Chemical Division of the U.S. Rubber Co., Schuylkill Products Co., Inc., and Union Tank Car Co. Electrical logs, drillers' logs, and well construction records were obtained from W. M. Eberhart & Sons of Baton Rouge, D. K. Summers of Denham Springs, Lavie Louisiana Co. of Lake Charles, and Acme Wellpoint Corp. of Baton Rouge. Much of the sub-surface geologic information was obtained from electrical logs of oil test wells provided by Leo W. Hough, State Geologist, Louisiana Geological Survey, Department of Conservation. Leo Bankston and E. C. Donnell, Jr., of the Baton Rouge Water Works Co., furnished pumpage and construction data for public supply wells and also assisted in making specific capacity tests. Individuals and officials of the following water companies and municipalities provided additional pertinent data: Alsen Water Co., Inc., Capitol Water Co., Inc., Klempeter Water Co., Inc., Village of Addis, Town of Baker, Village of Brusly, Town of Port Allen, and Town of Zachary.

WELL-NUMBERING SYSTEM

Records of water wells in East Baton Rouge and West Baton Rouge Parishes are given in table 3. Location of the wells listed in this table are shown on either plate 2 or plate 3. Wells in and near the Baton Rouge industrial district are shown also by aquifer screened, on figures 7, 8, 10, 13, 15, 17, 19, 21, 24, and 26. The system of numbering wells in Louisiana is based on an abbreviation of the parish in which they are located and a serial number denoting the order in which they are inventoried. For example, well EBR-1 (T. 6 S., R. 1 W.) on the Esso Standard Oil Co. property in Baton Rouge was the first well inventoried by the U.S. Geological Survey in East Baton Rouge Parish. Well WBR-2 (T. 7 S., R. 12 E.) was the second well inventoried in West Baton Rouge Parish. Well WBR-1 was not included in the table because its exact location could not be verified in the field.

Meyer and Turcan (1955, table 6) listed 483 wells in the Baton Rouge area. The difference in the number listed in their report and in table 3 of this report is not only due to the drilling of new wells but is also the result of reinventorying wells whose records and locations were incomplete or inaccurate in 1953.

GEOLOGY

The Baton Rouge area is immediately underlain by deposits of Recent and Pleistocene age (fig. 1), which in turn are underlain by sedimentary rocks of Pliocene(?) and Miocene age. With the exception of the Quaternary alluvium, which lies in the Mississippi River alluvial plain, most of the fresh-water-bearing sands of the Baton Rouge area crop out north of Baton Rouge in the northern part of southeastern Louisiana (fig. 1) and in the southwest corner of the State of Mississippi. Sands of Miocene age are the oldest deposits containing fresh water in the Baton Rouge area.

Pleistocene and Recent deposits constitute the uppermost sediments of East Baton Rouge and West Baton Rouge Parishes. These sediments may be divided into two units. The older consists of Pleistocene deltaic sediments, which underlie the terraced upland area. The younger consists of Pleistocene and Recent alluvium, which is limited to the present Mississippi River flood plain and lies unconformably on the Pleistocene deltaic sediments.

The Recent and Pleistocene alluvial deposits, the main body of which is west of the Mississippi River, have been differentiated by Cardwell and Rollo (1960, p. 10) primarily on the basis of texture and dating by the carbon-14 method. On the basis of carbon-14 dating, they con-

sider the coarse-grained substratum to be of late Pleistocene age and the overlying fine-grained topstratum to be of Recent age. As reported by Kolb and Van Lopik (1958, pls. 9 and 9A), the carbon-14 age of wood specimens collected from a depth of 133 feet in a well 0.7 mile south of Port Allen was 22,100 ± 780 years. The time interval from the end of the Pleistocene to the present was estimated by Horberg (1955, p. 280) to be approximately 11,000 years. Accordingly, most of the sand and gravel valley fill is considered to be of Pleistocene age, and the thin silty clayey mantle is considered to be of Recent age.

The Pleistocene sediments are underlain by sand and shale of Pliocene(?) age. Rollo (1960, p. 38) tentatively designated the base of the "600-foot" sand of the Baton Rouge area as the top of the Pliocene(?). Evidence to confirm or discount this tentative designation was not found during this investigation. In this report the Pliocene(?) includes the sediments between the base of the "600-foot" sand and the top of the "2,000-foot" sand, which is of Miocene age.

As described by Meyer and Turcan (1955, p. 10), the sediments of Miocene age are similar in appearance to the Pliocene(?) and the basal Pleistocene sediments and can be distinguished only by fossil evidence. A sample from the depth of 2,600 feet in a recently drilled water-test well (WBR-51, T. 8 S., R. 12 E.) contained the fossil *Marginulina microjohnsoni*, which marks the approximate top of the Miocene. This stratum correlates with the "2,000-foot" sand of the Baton Rouge industrial area (pl. 1) and supports the assumption of Meyer and Turcan (1955, p. 10) that the "2,000-foot" sand was the uppermost sand of Miocene age.

WATER-BEARING SANDS, THEIR PROPERTIES, AND UTILIZATION

The Baton Rouge area is underlain by a complex sequence of continental and marine sediments. The general relation of these sediments is illustrated on the fence diagram (pl. 1). The naming of the aquifers in accordance with their depth in and near the industrial district follows the usage of Meyer and Turcan (1955, pls. 1 and 2). These aquifers include the "400-foot," "600-foot," "800-foot," "1,000-foot," "1,200-foot," "1,500-foot," "1,700-foot," "2,000-foot," "2,400-foot," and "2,800-foot" sands. Other aquifers include the alluvial deposits and shallow Pleistocene deposits. The aquifers vary in thickness, grain size, and depth, and the exact location of the fresh- and brackish-water interface in each is as unpredictable as the thickness and continuity of the sands. However, electrical logs of oil-test wells indicate that water in most of the sands in the southern part (pl. 1 and fig. 2) of the area is highly mineralized and unsuitable for use. The altitude of the base of fresh ground water and areas where sands at intermediate depths between fresh-water-bearing sands and the land surface contain brackish water are shown on figure 2. The approximate aggregate thickness of fresh-water-bearing sands can be estimated by multiplying the thickness of the fresh-water-bearing deposits by the percentage of sand shown on figure 2. The average altitude of the land surface, which is relatively flat, is less than 50 feet; therefore, the altitude of the base of the fresh ground water approximates the thickness of fresh-water-bearing deposits.

ALLUVIAL DEPOSITS

Physical properties. The alluvial deposits of Recent and Pleistocene age are limited to the flood plain of the Mississippi River. This relatively flat flood plain occurs west and south of the upland surface, which was named the Prairie terrace by Fisk (Fisk and others, 1938, p. 51). The alluvial deposits consist of approximately 80 percent water-bearing sands and gravels and 20 percent silt and clay. In the flood-plain area the deposits range in thickness

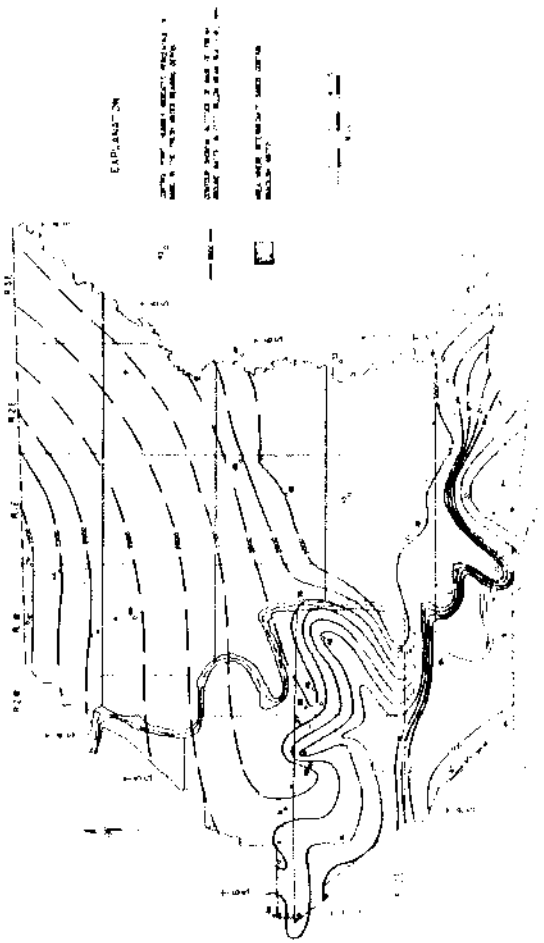
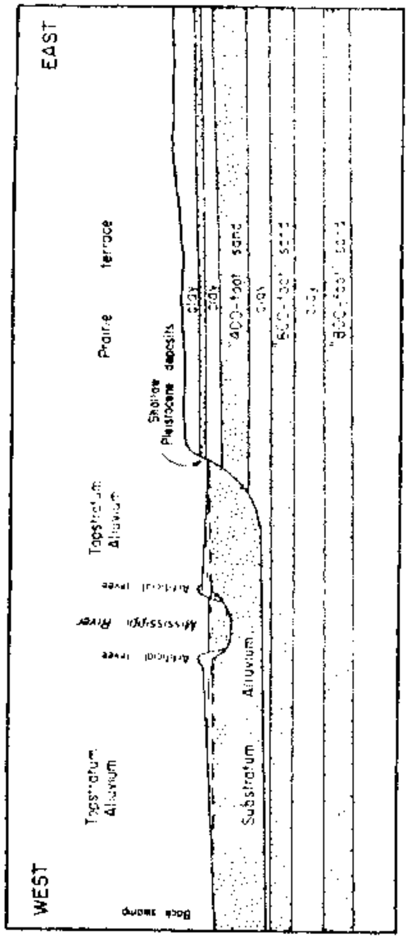


Figure 5. Map showing (1) altitude of the base of fresh ground water, (2) areas where sands at intermediate depths contain brackish water, and (3) percentage of fresh-water-bearing sand, East Baton Rouge and West Baton Rouge Parishes, La.

from 250 feet in northern West Baton Rouge Parish to 600 feet in the south-central part of the report area. Although the alluvial deposits pinch out at the edge of the Prairie terrace, the alluvial aquifer is in direct contact with the "400 foot" aquifer of earlier Pleistocene age (fig. 3).

Hydrologic properties. Water levels in wells screened in the alluvial deposits fluctuated with the river as shown by the hydrograph (fig. 4) for the Mississippi River and for well ER-242 (T. 8 S., R. 1 W.), which is 2.4 miles southeast and 1.9 miles north of the river and 4 miles downstream from the gaging station. (See pl. 2.) The hydrograph shows that during low-river stages the alluvium is discharging water into the river, and that during high-river stages the alluvium is recharged by the river. However, the principal source of recharge to the alluvial aquifer is rainfall.

The locations of wells screened only in the alluvial deposits in and near the industrial district are shown on figure 5. The yields from large-diameter wells range from 800 to 3,750 gpm. Well ER-586 (T. 7 S., R. 1 W.), which is owned by Louisiana State University, is the largest yielding (2,100 gpm) irrigation well in the area. One indication of a well's potential yield is its specific capacity, which is defined as the yield per unit drawdown (usually expressed in gallons per minute per foot of drawdown). The drawdown in a pumped well is caused by head losses in the aquifer resulting from flow in the aquifer toward the well and by well losses due to flow through the well screen and well casing. The well loss due to friction caused by flow through the casing is related to the rate of flow and to the diameter, length, and age of the casing. Therefore, if the well's yield and construction are known the observed specific capacity can be corrected for friction loss in the pipe. Corrected specific capacity is calculated by (1) determining the friction loss, according to standard pipe friction tables, produced by the flow of water through the well casing, (2) subtracting the friction loss from the observed drawdown, and (3) dividing the flow (in gallons per minute) by the corrected drawdown (in feet). Corrected specific capacities of wells in this aquifer range



from 75 to 94 gpm per foot of drawdown and average 89 gpm per foot of drawdown at an average yield of about 2,600 gpm (table 2).

The coefficient of transmissibility[5] of alluvial deposits in the industrial district ranges from 140,000 to 210,000 gpd per foot (table 2) and averages 170,000 gpd per foot. The average permeability[6] of the alluvial deposits in the industrial district is 1,700 gpd per square foot. The coefficient of storage[7] ranges from 1.0 X 10[illegible] to 9.0 X 10[illegible]. The coefficient of transmissibility of the alluvial deposits at the site of well EB-686 (T. 7 S., R. 1 W.) is 580,000 gpd per foot. The hydraulic characteristics of an aquifer—coefficients of transmissibility and storage—can be used to determine the theoretical effects of pumping, which were discussed by Meyer and Turcan (1955, p. 59-63).

Quality of water. The alluvium generally yields a hard[8] calcium bicarbonate type water of high iron content. The total iron and manganese content of the water is considerably more than the 0.3 ppm (part per million) recommended by the U.S. Public Health Service (1946, p. 13) as the maximum limit for drinking purposes. The total iron and manganese concentrations ranged from 0.72 ppm in water from well WBR-31 (T. 8 S., R. 12 E.) (table 1) to 18 ppm in water from well EB-501 (T. 6 S., R. 1 W.) (Meyer and Turcan, 1955, table 2). The hardness of water from the alluvium ranged from 123 ppm (WBR-31)

[5] The coefficient of transmissibility is defined as the number of gallons of water that will move in 1 day through a vertical strip of the aquifer 1 foot wide having the full height of the aquifer, under a hydraulic gradient of 1 foot per foot, at the prevailing temperature of the water.

[6] The field coefficient of permeability is expressed as the rate of flow in gallons per day through a cross-sectional area of 1 square foot under a hydraulic gradient of 1 foot per foot at the prevailing temperature of water.

[7] The coefficient of storage of an aquifer is defined as the volume of water it releases from or takes into storage per unit surface area of the aquifer per unit change in the component of head normal to that surface.

[8] In this report, terms describing the general chemical character of water are used in particular senses, as in the following examples: (1) "alkaline" designates a water in which the pH or the hydrogen ion concentration is more than 7.0; (2) "calcium bicarbonate" designates a water in which calcium and magnesium [illegible] in order of abundance over sodium and potassium and bicarbonate is the predominant anion; (3) similarly "sodium bicarbonate" designates a water in which sodium and potassium ranks first, in order of abundance, over calcium and magnesium; (4) the term "fresh water" designates a water in which the chloride content is less than 250 ppm; and (5) classifications of hardness of water are:

Classification	Hardness as $CaCO_3$
Soft	less than 60 ppm
Moderately hard	60 to 150 ppm
Hard	over 150 ppm

to 452 ppm (EB-586, T. 7 S., R. 1 W.). Although the highest chloride content of water reported herein was 1,26 ppm (WBR-51, T. 8 S., R. 12 E.), electrical logs of oil-test wells in the southern and southwestern corners of the area indicate that the basal part of the alluvial sands contains salt water (pl. 1). The chloride content of water from wells adjacent to the Mississippi River usually is less than 20 ppm.

Meyer and Turcan (1955, table 2) recorded a yearly temperature range from 59° to 74°F for water from a con-

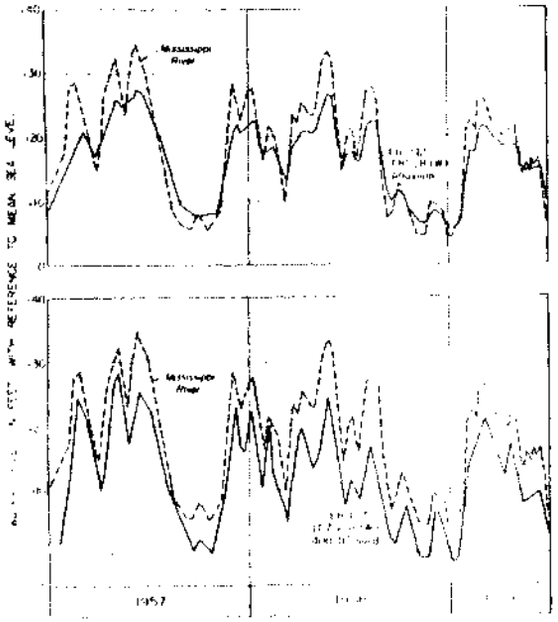


Figure 4. Hydrographs of water level in the Mississippi River, Recent and Pleistocene alluvium, and "400-foot" sand in the Baton Rouge area.

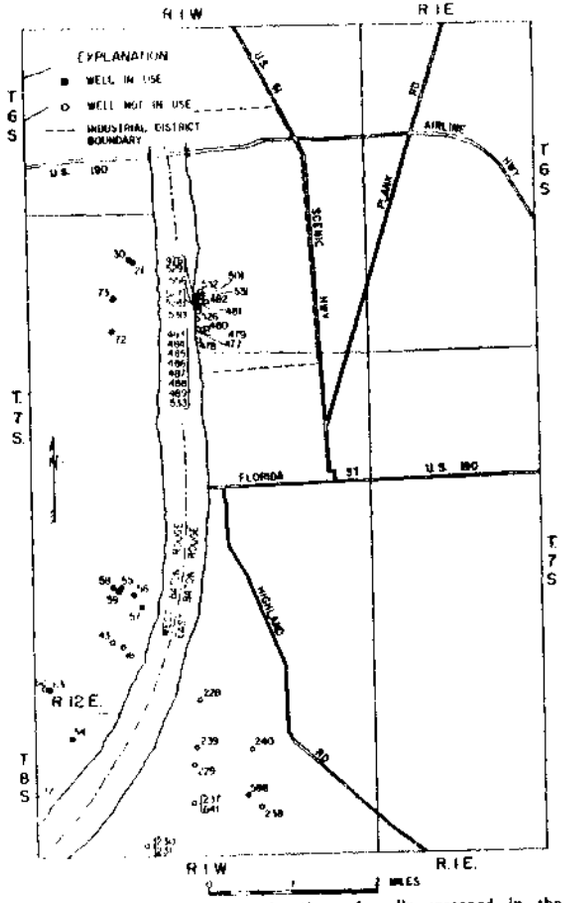


Figure 5. Map showing location of wells screened in the alluvial deposits of Pleistocene age in and near the Baton Rouge industrial district.

continuously pumped well tapping alluvium (EBR-501, T. 8 S., R. 1 W.) on the east bank of the Mississippi River. As distance from the river increases, the range of the yearly temperature variation of well water decreases. Generally the average temperature of water from wells screened in the alluvial deposits is below 70 F.

Withdrawals. Excluding the temporary pre-strike relief pumping at the site of the Port Allen locks, it is estimated that in 1959 the daily pumpage from the alluvial deposits was 13 mgd. Industries in East Baton Rouge Parish use water from the alluvial deposits for cooling during the warm months. In the cooler months, when the temperature of the river water is below that of the water in the alluvium, river water was used. The maximum amount of water pumped from the alluvium for industrial purposes was about 6 mgd (based on a 31-day period) in October 1956.

Addis is the only municipality in the area that used water from the alluvium. The water supply at Addis consists of two wells (WBR-8 and -49, T. 8 S., R. 12 E.), both 252 feet deep.

Many domestic, stock, and irrigation wells are screened in the alluvial sands (table 3). It is estimated that 0.7 mgd of ground water is pumped for these purposes in East Baton Rouge and West Baton Rouge Parishes.

At the Port Allen locks, which are being constructed by the Corps of Engineers, U.S. Army, water is pumped from the alluvium to lower the hydrostatic level so that construction work below river level may proceed without danger of being inundated. In June 1958, a maximum of 47 mgd was pumped (fig. 6) and the average daily pumpage in 1959 was 28 mgd. The total amount of water pumped from 32 temporary wells, 8 permanent wells, and approximately 1,000 dewatering points at this site during the period September 1957, when pumping started, to July 1959 is estimated to be 16.5 billion gallons, or an average of 22 mgd. When construction is completed, 8 wells will be used, during high river stage, to reduce the hydrostatic pressure.

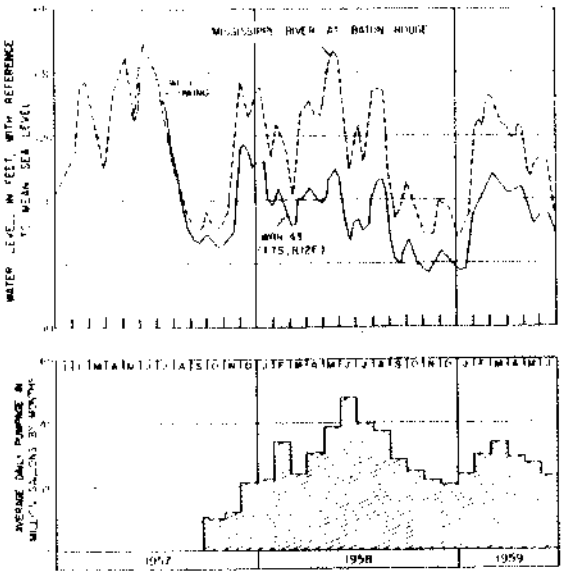


Figure 6. Graphs showing relation of pumpage to water levels in well screened in the alluvial deposits, Port Allen locks, West Baton Rouge Parish.

Effects of pumping. Drawdown caused by large-scale withdrawal from alluvial sands and gravels, such as at the Port Allen locks, induces influent seepage from the Mississippi River. This boundary (the river) causes the cone of depression affected by large withdrawals to reach equilibrium in form during an early period of pumping. Because river water contains lower concentrations of iron and hardness-causing constituents than water in the alluvium, the quality of the water improves with increased influent seepage from the river. Except for the Port Allen locks area, water levels in most wells screened in the alluvial deposits in the Baton Rouge area have not been affected noticeably by pumping and are usually within 20

feet of the surface. As shown by the hydrograph for well WBR-43, about 0.5 mile from the locks (fig. 6), pumpage during the period June 1957-July 1959 at the Port Allen locks in an area of about 2 square miles caused a decline of the water level and increased the quantity of induced seepage. Hydrographs for wells EB-242 and 127, and the river (fig. 4) show the effect of changes in river stage on the water levels in wells some distance from the area of heavy withdrawals.

SHALLOW PLEISTOCENE DEPOSITS

Physical properties. "Shallow Pleistocene" aquifers underlie part of the upland Prairie terrace region of East Baton Rouge Parish, south of the boundary line of T. 6 S. and T. 7 S. The shallow Pleistocene deposits usually are within 200 feet of the surface except in the extreme southeastern corner of the project area where these sands extend to a depth of 450 feet below land surface. As illustrated on plate 1, the shallow Pleistocene deposits are irregular in occurrence and thickness. A mechanical analysis (fig. 7) of sand between depths of 279 and 289 feet in well EB-681 (T. 8 S., R. 2 E.) shows the sand to be medium to coarse grained.

Hydrologic properties. The shallow Pleistocene deposits are recharged by seepage from surface water bodies and from precipitation on the land surface. Natural discharge takes place at lower elevations in the form of springs and seeps along streams.

Well EB-681 yields 85 gpm with a drawdown of 22.41 feet (table 2). The specific capacity of this well, corrected for head loss due to friction, is 4.0 gpm per foot of drawdown. The location of wells screened in shallow Pleistocene deposits in and near the Baton Rouge industrial district is shown on figure 8.

Quality of water. Several individual sands are grouped within the shallow Pleistocene deposits and the chemical quality of the water in them varies greatly. The sand that underlies the city of Baton Rouge yields hard water of the calcium bicarbonate type, as shown by the chemical analyses (table 1) of water from wells EB-666 (T. 7 S., R. 1 E.) and -687 (T. 6 S., R. 1 E.). The total iron content in water from these wells averages 1.5 ppm. Although the dissolved-solids content of water from well EB-665 was 508 ppm, the individual constituents were not abnormally high. The pH ranges from 6.8 (EB-687) to 7.3 (EB-665). The water from well EB-665 has a temperature of 68°F, which is the average annual temperature of Baton Rouge. Waters having similar chemical constituents are found in the two "shallow Pleistocene" sands in the southeastern part of the project area. The water generally is alkaline, moderately hard, and of sodium bicarbonate type. The iron and manganese concentrations ranged from 0.12 ppm in water from EB-681 (T. 8 S., R. 2 E.) to 0.66 ppm in water from EB-583 (T. 7 S., R. 1 W.). The dissolved-solids content ranged from 277 ppm (EB-699, T. 8 S., R. 3 E.) to 503 ppm (EB-631A, T. 8 S., R. 2 E.). The temperatures of

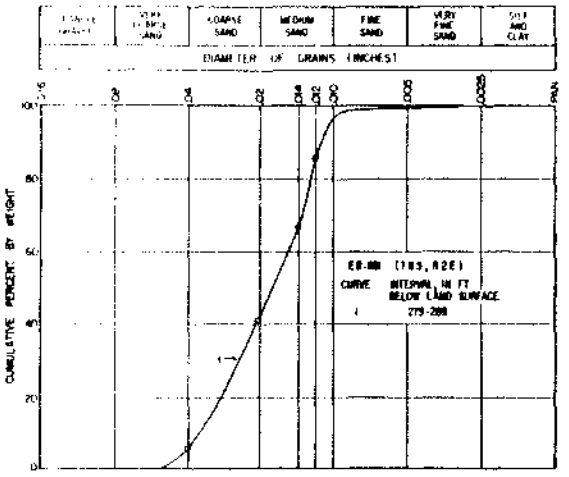


Figure 7. Cumulative curve of mechanical composition of materials from the shallow Pleistocene deposits.

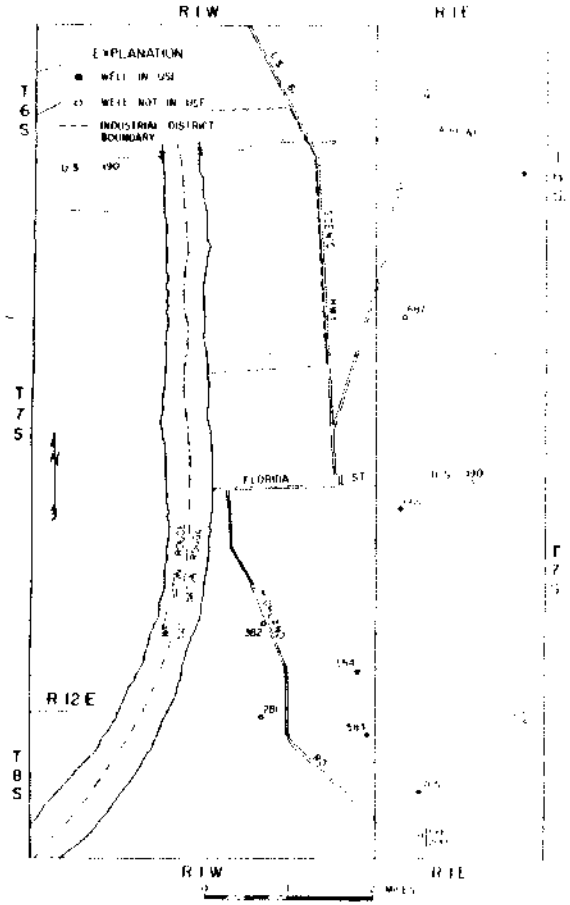


Figure 8. Map showing location of wells treated in the shallow Pleistocene deposits in and near the Baton Rouge industrial district.

the water from wells in southeastern Baton Rouge area range from 69° to 71° F.

The thermal gradient of water from wells in the Baton Rouge area increases by 1°F for about each 90-foot increase in depth. The temperature of water from a well screened at a given depth below 100 feet can be estimated by multiplying the well's depth by the ratio of 1°F per 90 feet and adding the result to the mean annual temperature (68°F). This relation of water temperature to well depth and mean annual temperature is not applicable to the temperature of water from alluvial deposits.

Withdrawals. The "shallow Pleistocene" sands have become important as a source of water for domestic use because of increased needs of the rural population. Small industries in the city of Baton Rouge use water from these sands for washing and cooling purposes; and several privately owned wells yield water for air conditioning and lawn irrigation. The quantity of water pumped from these deposits is negligible and is not considered in the total pumpage figures.

Effects of pumping. As only small amounts of water are pumped from the "shallow Pleistocene" sand, water levels have remained within 20 feet of the surface. In the southernmost part of the area, where brackish water exists at the base of the sand, increased pumping could cause salt water to move toward areas of heavy withdrawals and thus limit the development of this aquifer.

"400-FOOT" SAND

Physical properties. The "400-foot" sand (aquifer) of the Baton Rouge area, which consists of several individual but connected sands, underlies East Baton Rouge Parish and much of West Baton Rouge Parish. As shown on plate 1, the thickness of this unit ranges from 50 feet to 300 feet. Within the industrial district this aquifer ranges in thickness from 75 to 200 feet but is lenticular and is divided into two recognizable sands. (See well 35, pl. 1.)

Sediments of the "400-foot" sand in the industrial district range in grain size from fine to medium. The

source of the grain size analyses of the aquifer and other deposits is Meyer and Turcan (1955), unless otherwise noted. Cumulative curves (fig. 9) of mechanical analysis of material from well ER-638 (T. 6 S., R. 1 E.) show a range in grain size from medium to coarse.

The "400-foot" sand in some places is connected with the alluvial deposits or the "600-foot" sand. The "400-foot" sand is hydraulically connected with the alluvium (pl. 1 and fig. 4) near the western edge of the terraced upland in East Baton Rouge Parish, and with the "600-foot" sand in the southern part of both parishes.

Hydrologic properties. Many of the wells screened in the "400-foot" sand are screened also in the "600-foot" sand. The location of "400-" and "600-foot" wells in and near the Baton Rouge industrial district is shown on figure 10. The yields of large-diameter (8 inches or more)

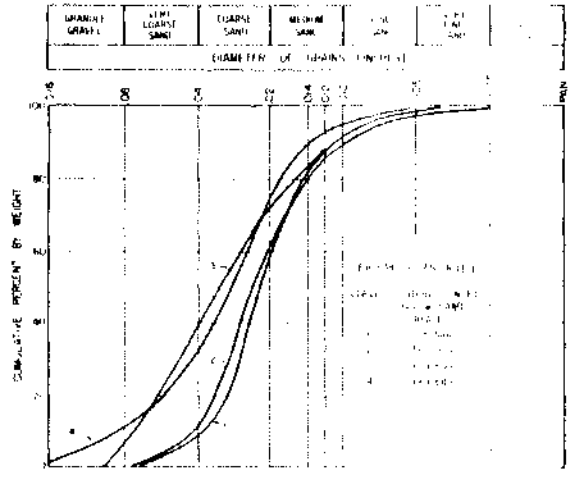


Figure 9. Cumulative curves of mechanical composition of materials from the "400-foot" sand in the Baton Rouge area.

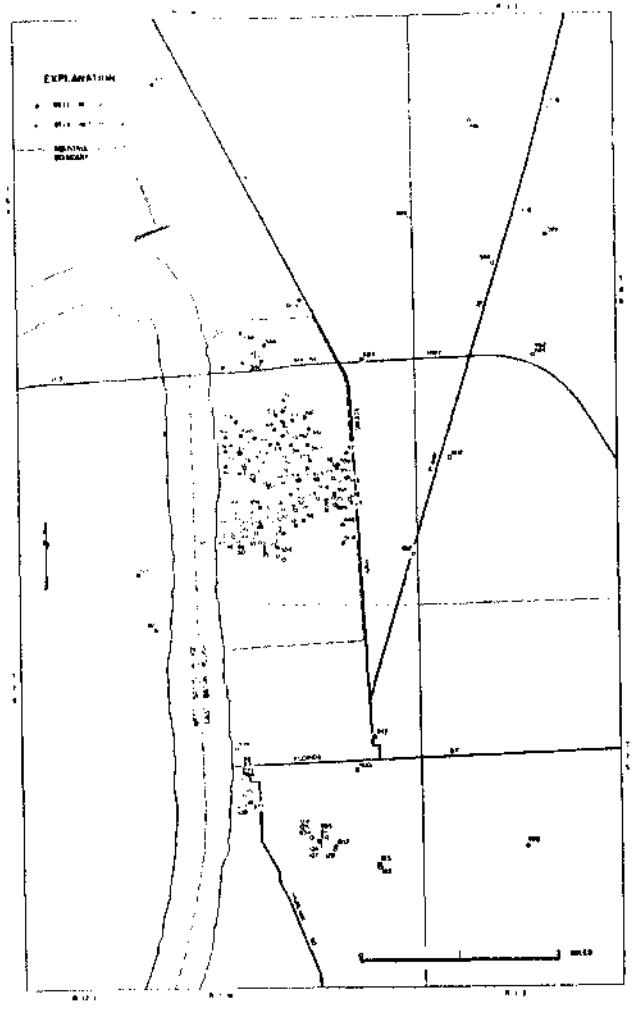


Figure 10. Map showing location of wells screened in the "400-foot" sand, "600-foot" sand, and "400-foot" and "600-foot" sands in and near the Baton Rouge industrial district.

industrial wells screened only in the "400-foot" sand range from 500 to 1,600 gpm. Uncorrected specific capacities of wells in the industrial district range from 12.5 to 14.7 gpm per foot of drawdown. One large-diameter well southeast of Baton Rouge (ER-638, T. 7 S., R. 1 E.) has a specific capacity, corrected for losses due to pipe friction, of 9.6 gpm per foot of drawdown at a yield of 250 gpm (table 23).

The coefficient of transmissibility of the "400-foot" sand (table 24) ranges from 34,000 to 44,000 gpd per foot. The coefficient of permeability ranges from 260 to 338 gpd per square foot and averages 300 gpd per square foot. The coefficient of storage ranges from 2.6 X 10^{-4} to 9.6 X 10^{-4}.

The effect of hydraulic connection between the alluvium and the river is shown by the hydrographs (fig. 11 of the river and well EB-127 (T. 7 S., R. 1 W.) screened only in the "400-foot" sand. There is a slight time lag in the fluctuations of water level in this well but the magnitude of the fluctuations is nearly the same as the changes in the river stage. As shown by these graphs (fig. 11 the Mississippi River discharges at varying rates water into the aquifer.

Quality of water. Water from the "400-foot" sand is of the soft, alkaline, and of sodium bicarbonate type and has a total iron content ranging from 0.01 to 0.57 ppm. Except for water from wells in the southern part of the area in which the chloride content was as much as 113 ppm, the average chloride content of water from wells in this aquifer was less than 8.0 ppm. Periodic and random sampling did not indicate any movement of salt water in this aquifer. Because of its low temperature, water from the "400 foot" sand is used for cooling. The average temperature of water from the "400 foot" sand in the industrial district is 71 F, whereas the temperature of water from wells in the southeastern part of the area is 74 F.

Withdrawals. Because of the large number of wells screened in both the "400-foot" and the "600 foot" sand it is impossible to compute pumpage by aquifer. Much of the water for industrial use from the "400-" and "600-foot" sands is pumped during the period May to October. Pumpage

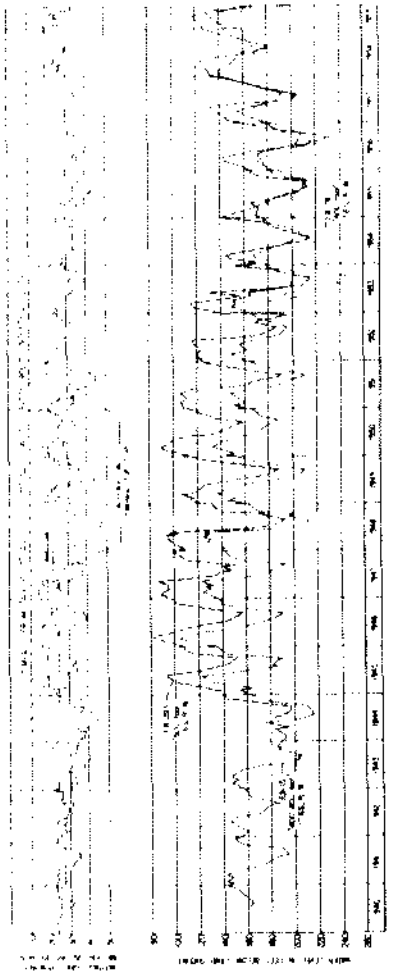


Figure 11. Graphs showing relation of pumpage to water levels in wells screened in the "400-foot" and "600-foot" sands in the Baton Rouge industrial district.

ing for industrial purposes decreases in October and reaches a minimum during the winter. The maximum daily pumpage by year was during the latter part (1944) of World War II, when an average of 30.4 mgd was pumped from the "400-" and "600-foot" sands (fig. 11). The second recorded high was in 1955, when an average of 27.9 mgd was pumped. Since 1955, pumping from the "400-" and "600-foot" sands has gradually decreased, to an average of 22.9 mgd during the first half of 1959.

Although most of the water pumped from the "400-foot" sand is for industrial use, many rural domestic wells also are screened in this aquifer. The only areas where the "400-foot" sand is used for public supply are in the extreme southern part of the upland-terrace areas, where deeper sands contain brackish water. However, the amount used for rural and public supplies are considered negligible when compared with industrial pumpage.

Effects of pumping. As shown by measurements made in well EB-78 (T. 6 S., R. 1 W.) (fig. 11), water levels in the "400-foot" sand in the industrial district have recovered 70 feet during the 5-year period March 1954-March 1959, an average of 14 feet per year. The hydrograph (fig. 11) of well EB-45 (T. 6 S., R. 1 W.), screened in the "400-" and "600-foot" sands in the industrial district suggests that the recovery trend in wells screened in both aquifers began in 1956 and averaged 11 feet per year, the same as in wells in the "400-foot" sand. Water levels in the "400-" and "600-foot" sands during the period of maximum recovery in 1959 were nearly as high as the highest water level measured in 1947.

"600-FOOT" SAND

Physical properties. The "600-foot" sand, which underlies both East and West Baton Rouge Parishes, consists of several individual but hydraulically connected sand strata. Because of the lenticularity of the individual sand beds, this aquifer can best be delineated as an interval containing a number of sands. The thickness of the "600-foot" sand ranges from 25 feet to more than 200 feet. The colors of the sand in this aquifer is predominantly yellowish gray and light gray. Dark minerals such as amphibole and pyroxene, combined with a large concentration of quartz, give these sands a "salt-and-pepper" appearance. Cumulative curves show the material to be predominantly of medium grain size, but having an average of 25 percent fine sand. In some areas outside the industrial district the "600-foot" sand is connected with the overlying "400-foot" and the underlying "800-foot" sands (pl. 1).

Hydrologic properties. Thirty-two wells are screened in the "600-foot" sand in the Baton Rouge industrial district (fig. 10). Of this total, 12 are screened in only the "600-foot" sand and 20 are screened in two or more aquifers. The locations of wells screened in the "400-" and "600-foot" sands in and near the industrial district are shown on figure 10. The yields from wells screened in only the "600-foot" sand range from 430 to 1,460 gpm and average 1,000 gpm. The uncorrected specific capacities of wells screened only in this sand average 12.8 gpm per foot of drawdown (Meyer and Turcan, 1955, p. 30).

The coefficient of transmissibility of the "600-foot" sand ranges from 88,000 to 123,000 gpd per foot and averages 110,000 gpd per foot. The coefficient of permeability ranges from 520 to 809 gpd per square foot and averages 630 gpd per square foot. The coefficient of storage ranges from 1.1×10^{-1} to 6.1×10^{-5}.

Quality of water. Fresh water from the "600-foot" sand generally is alkaline, soft, and of sodium bicarbonate type (table 1) and has a total iron content that ranged from 0.02 ppm (WBR-60, T. 7 S., R. 12 E.) to 0.64 ppm (EB-514, T. 6 S., R. 1 W.). The manganese content was usually 0.20 ppm or more, except in wells EB-597 (T. 8 S., R. 3 E.) and WBR-42 (T. 7 S., R. 12 E.), which yielded water with manganese content of 0.02 ppm. The chloride content of water from wells in the industrial district was low, as shown by the analysis for well EB-597. The average temperature of water from wells in the industrial district is 71° F.

The "600-foot" sand is the only aquifer in which encroachment of brackish water has been detected. Several miles directly south of the industries and in the vicinity of

the Baton Rouge City Park, the chloride content of water from the "600-foot" sand has increased. Figure 12 shows the trend in the chloride content of water from wells EB-500 and 493 (T. 7 S., R. 1 W.). During the period 1951 to May 1959 the chloride content of water from well EB-500 increased from 4 ppm to 175 ppm. The chloride content of water from well EB-493 increased from a high of 320 ppm in June 1952 to a high of 590 ppm in May 1959. Well EB-500 is screened in the basal part of the "600-foot" sand and well EB-493, which is 0.75 mile southwest of well EB-500, is screened in the upper and basal sands of the "600-foot" sand. At the site of well EB-493 the upper and basal sands are separated by 75 feet of clay; however, at the site of well EB-500 the intervening clay thins and probably pinches out within a short distance. The chloride content of water from a well (EB-123) at the Baton Rouge City Park increased from 7 ppm in 1917 to 710 ppm in 1950. This well has not been used or sampled since 1950.

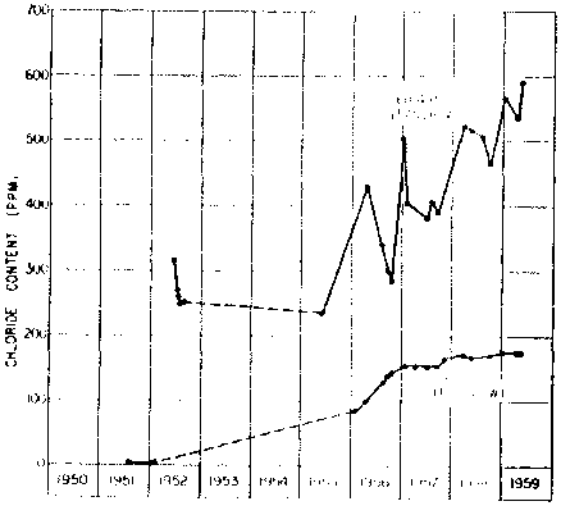


Figure 12. Graphs showing trends in the chloride content of water from wells screened in the "600-foot" sand

Periodic analysis indicates that the chloride content of water from the "600-foot" sand in the industrial district has not increased in recent years (1956-59).

Withdrawals. Pumpage from the "400-" and "600-foot" sands is combined because of the many wells screened in both sands; and the subject is discussed in the Withdrawals section of the "400-foot" sand.

Effects of pumping. A reduction of pumping from the "600-foot" sand has resulted in a recovery of water levels. As shown by the hydrograph (fig. 11) for well EB-293 (T. 6 S., R. 1 W.), water levels in the "600-foot" sand in the industrial district have recovered from a yearly high of 140 feet below land surface in April 1956 to a yearly high of 118 feet below land surface in April 1959. This recovery on a yearly basis is about 7 feet.

"800-FOOT" SAND

Physical properties. The "800-foot" sand underlies much of East and West Baton Rouge Parishes (pl. 1), and includes within it sand strata that are irregular in thickness and areal extent. The maximum thickness of the fresh-water-bearing section of sand ranges from 80 feet in the industrial district to 150 feet near the eastern border of the project area. At the southern edge of the industrial district is an east-west-trending sand unit that has no distinct equivalent to the north or south. (See well 35, pl. 1.) Immediately north of the industrial district, sands of the "800-foot" sand pinch out locally, and clay occupies their stratigraphic position for a short distance.

Mechanical analyses of the "800-foot" sand show the grain size to range from fine to medium, of which an average of 70 percent is medium grained. The color of the sand is similar (yellowish to light-gray) to that of the other sands below the alluvium.

Hydrologic properties. Of the 25 wells screened in the "800-foot" sand (fig. 13), eleven are in use. Some of these wells are screened in two or more sands, which include the "400-foot," "600-foot," "1,000-foot," and "1,200-foot" sands. The maximum yield reported for a well screened

only in the "800-foot" sand is 950 ppm (EB-167, T. 6 S., R. 1 W.); wells in more than one aquifer yield as much as a total of 1,100 gpm (EB-398, T. 6 S., R. 1 W.). Specific capacities of two wells, corrected for loss due to pipe friction, are 14.2 and 36.3 gpm per foot of drawdown. The coefficient of transmissibility, as determined from a recovery test of well EB-167, is 24,000 gpd per foot. On the basis of the thickness of the aquifer at the well, the permeability is 270 gpd per square foot (table 2).

Quality of water. Water from the "800-foot" sand generally is of the alkaline, soft, and of the sodium bicarbonate type. Chemical data of water samples collected from three wells (ER-120, T. 7 S., R. 1 W.; ER-159, T. 7 S., R. 1 E.; WBR-83, T. 6 S., R. 11 E.) screened in the "800-foot" sand are listed in table 1. The total iron content of water from wells EB-159 and -120 in the industrial district was 0.04 and 0.09 ppm respectively. As indicated by the analysis of water from well WBR-83 (table 1), the total iron content of water from the "800-foot" sand northwest of the industrial district was 0.13 ppm. The chloride content in water from wells in the "800-foot" sand was less than 10 ppm, but data from electrical logs indicate that water within this sand near the southern boundary of the project area (pl. 1) becomes highly mineralized. The temperature of water from this sand in the industrial district ranges from 76° to 79° F.

Withdrawals. Withdrawals from this sand have been at the rate of about 2 mgd during the last 6 years (1954-59). Most of the water withdrawn from the "800-foot" sand is used by industries; the remainder, which is a negligible amount, is used for domestic purposes.

Effects of pumping. Even though pumping from the "800-foot" sand is nearly uniform throughout the year, the altitude and fluctuations of water level in the "800-foot" sand in the area south of Florida Street (pl. 1) are similar to those in the "600-foot" sand. These similarities are probably the result of hydraulic connection between the two sands. On the basis of this similarity and reported well records, well ER-128 (T. 7 S., R. 1 W.) was constructed in 1953 to be screened in the "600-foot" sand (Meyer and

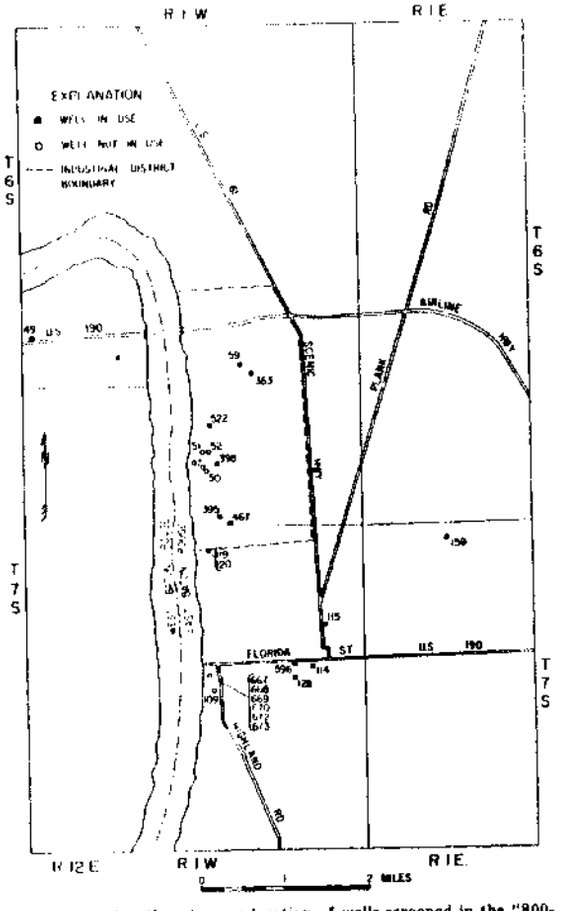


Figure 13. Map showing location of wells screened in the "800-foot" sand in and near the Baton Rouge industrial district.

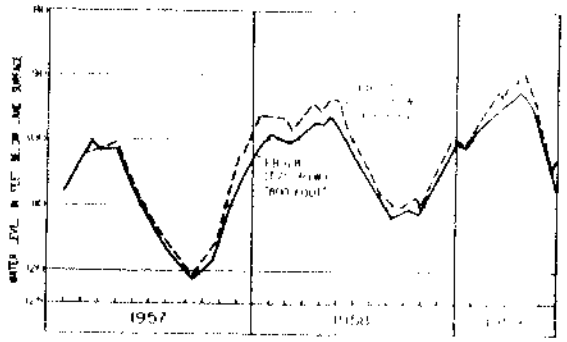


Figure 14. Hydrographs showing water-level fluctuations in wells screened in the "600-foot" and the "800-foot" sand outside the Baton Rouge industrial district.

Turcan, 1955, p. 53). However, well "sounding" and spontaneous-potential and gamma-ray logs indicated that it was 970 feet deep and screened in the "800-foot" sand. However, because of the hydraulic connection between the two sands the water-level fluctuations in well EB-128 are considered to represent those in the "600-foot" sand in the area 2 miles southeast of the center of heavy pumping. Long-term water-level records for well EB-128 show the annual water-level decline in the period Feb. 1944 June 1959 to have been about 0.7 foot. However, as a result of a reduction in pumping since 1954, the water level in this well has recovered at a rate of about 5 feet per year, to a high of 94 feet below the land surface in April 1959.

"1,000-FOOT" SAND

Physical properties. Geologic data indicate that the "1,000-foot" sand, which is a separate hydrologic unit in the Baton Rouge industrial district (pl. II), coalesces with the "1,200-foot" sand to the north and east of the industrial district. The "1,000 foot" sand is relatively thin (less than 40 feet thick) in the industrial district; however, northward it thickens to 80 feet before connecting with the "1,200-foot" sand. South of the industrial district, it is no more than 59 feet thick.

The sand is similar in color to other Pliocene(?) and Pleistocene sands in the area, being yellowish gray to light gray. Cumulative curves show that the sand is medium to fine grained and has a relatively nonuniform distribution of grain sizes.

Hydrologic properties. Only a few wells screened only in the "1,000-foot" sand were in use in 1959. Of the 20 wells listed in table 3 as screened in the "1,000-foot" sand, only 5 are still in use. Of the five only 2, both of which are screened in more than one aquifer (EB-398 and -622, T. 6 S., R. 1 W.) are in the industrial district. These wells and others in the vicinity are shown on figure 15.

Reported specific capacities, not corrected for loss due to friction in the pipe, of 2 wells screened only in the "1,000-foot" sand are 15 and 26 gpm per foot of drawdown. Because of the lack of suitable wells, pumping tests have not been made in this sand.

Quality of water. A complete chemical analysis (EB-163, T. 6 S., R. 1 W.) and a partial analysis (EB-327, T. 7 S., R. 1 E.) of water from the "1,000-foot" sand indicate the water quality to be similar to that from the "800-foot" and "1,200-foot" sands (table 1). The analysis data for well EB-163 shows the water to be of alkaline and of sodium bicarbonate type. All constituents are low in concentration and the water should be satisfactory for most uses without treatment. Water temperatures in the industrial district range from 77° to 79°F.

Withdrawals. A relatively small quantity of water is withdrawn from the "1,000-foot" sand. The two large-diameter industrial wells (EB-398 and -622) screened in this aquifer are screened also in the "800-foot" and "1,200-foot" sands. The village of Erwinville, in West Baton Rouge Parish, has a privately owned public-supply well that taps the "1,000 foot" sand (WBR-29, T. 6 S., R. 10 E.), which supplies water to several families. Only one "1,000-foot" domestic well (ER-137, T. 6 S., R. 1 E.) inventoried is still in use. An estimated total of 2 mgd is pumped from the "1,000-foot" sand and approximately 90 percent of this water is pumped in the Baton Rouge industrial district.

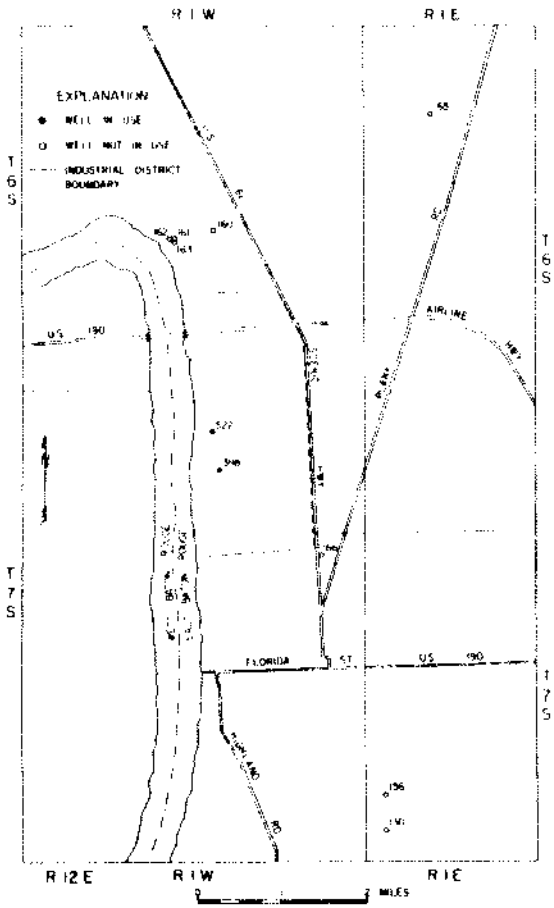


Figure 15. Map showing location of wells screened in the "1,000-foot" sand in and near the Baton Rouge industrial district.

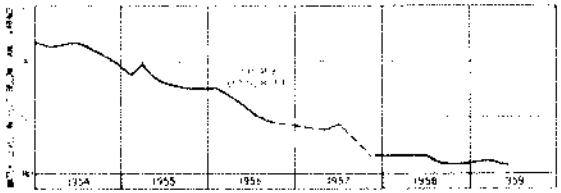


Figure 16. Hydrograph showing water-level fluctuations in a well screened in the "1,000-foot" sand at Baton Rouge.

Effects of pumping. Although withdrawals from the "1,000-foot" sand have not increased during the last few years, the water level in well EB-169 (T. 5 S., R. 1 E.), about 4 miles northeast of the industrial district (fig. 16), has declined at the rate of about 9 feet per year in the period 1954-59. This decline is probably the result of hydrologic connection between the "1,000-foot" sand and the "1,200-foot" sand, which is one of the most heavily pumped aquifers in the industrial district.

"1,200-FOOT" SAND

Physical properties. The "1,200-foot" sand is one of the major water-producing aquifers in the Baton Rouge area. Except for the north-central part of East Baton Rouge Parish, this sand underlies the entire project area. (See pl. 1.) This aquifer has a maximum thickness of 200 feet in the areas north of the industrial district and along the western boundaries of West Baton Rouge Parish (pl. 1). This aquifer is about 100 feet thick in the industrial district. As discussed under the "physical properties" section of the "1,000-foot" sand, the "1,200-foot" sand and the "1,000-foot" sand coalesce a few miles north of the industrial district. (See well 34, pl. 1.)

The "1,200-foot" sand is similar in appearance (yellowish gray to light gray) to other sands of Pliocene(?) and Pleistocene age. Cumulative curves show the grain size to range from fine to medium.

Hydrologic properties. Forty-one of the inventoried wells screened in the "1,200-foot" sand are in use; 35 are

screened only in the "1,200-foot" sand, and 6 are screened in two or more sands. All wells screened in the "1,200-foot" sand in and near the industrial district are shown on figure 17. The pumping yield of 18 industrial and public-supply wells range from 300 to 1,800 gpm and average 970 gpm. Specific capacities of wells in the sand, corrected for head loss due to friction, range from 7.8 to 47.9 gpm per foot of drawdown and average 26.0 gpm per foot (table 2).

The coefficient of transmissibility computed from pumping tests ranges from 22,000 to 120,000 gpd per foot and averages 71,000 gpd per foot. The coefficient of permeability ranges from 300 to 800 gpd per square foot and averages 560 gpd per square foot. The coefficient of storage ranges from 1.6×10^{-4} to 8.5×10^{-4}.

Quality of water. Except for water from well ER-629 (T. 6 S., R. 1 W.), situated in the northern part of the project area, water from the "1,200-foot" sand is of suitable quality for most purposes without treatment (table 1). It is of the soft, alkaline, and of sodium bicarbonate type, having a pH range from 8.0 to 9.0. The total iron content of the water from wells in the central and southern parts of the area ranged from 0.02 ppm to 0.10 ppm, and the hardness ranged from 0 to 9 ppm. Chloride content of water from wells in the industrial district was less than 5.0 ppm; however, toward the south and east they increased to as much as 38 ppm, as shown by the analyses of samples from wells ER-219 and -326 (T. 7 S., R. 1 E.). The temperatures of the water range from 78° to 81° F.

Withdrawals. The average daily pumpage from the "1,200-foot" sand has increased from 2.5 mgd in 1943 to 18.2 mgd during the first half of 1959. The withdrawals from this sand and their effect on the water level in a well (ER-117) about 3 miles southeast of the industrial district are shown on figure 18.

The industries of Baton Rouge during the first half of 1959 pumped an average of 15 mgd, which represents an increase of more than 8 mgd since 1951. Municipal use at Baton Rouge and Port Allen has increased from 0.5 to about 3 mgd during the same period. Pumping from 10

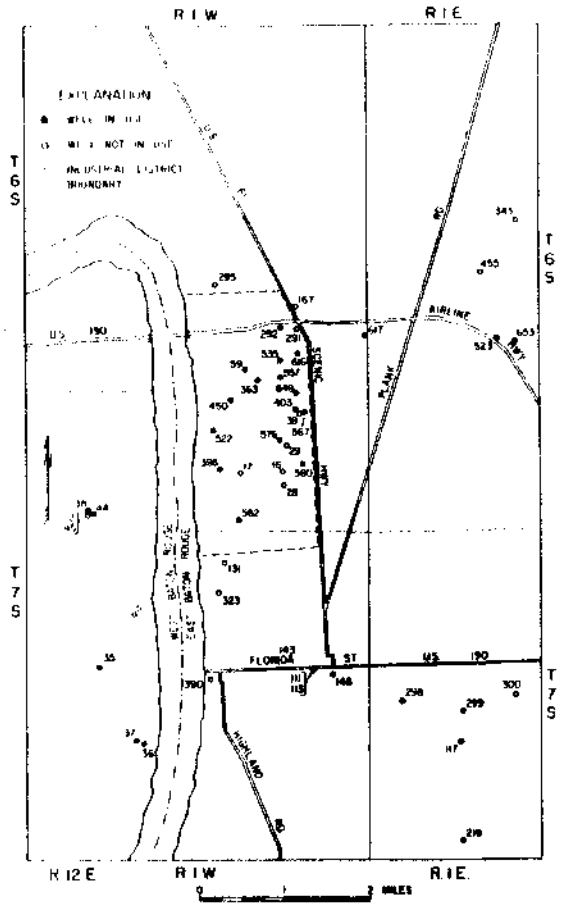


Figure 17. Map showing location of wells screened in the "1,200-foot" sand in and near the Baton Rouge industrial district.

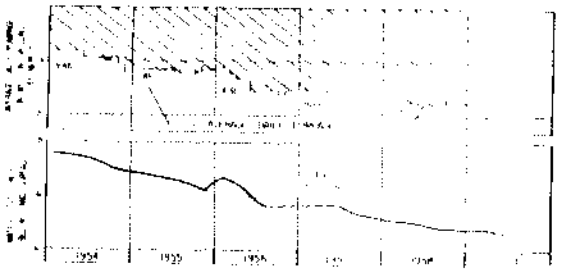


Figure 18. Graphs showing relation of pumpage to water level in a well screened in the "1,200-foot" sand in the Baton Rouge area.

domestic wells contributes only a small amount to the total pumpage. Although the total amount pumped from the "400" and "600-foot" sands is more than from the "1,200-foot" sand, the "1,200-foot" sand ranks second to the "2,000-foot" sand in quantity pumped from an individual aquifer.

Effects of pumping. The increase in withdrawals from the "1,200-foot" sand has caused an increase in the rate of decline of water levels. As illustrated by the hydrograph (fig. 18) for well EB-417, the annual decline about 1 miles south of the industrial district averaged about 5 feet during the 5½ years, 1954-59. The water level in well EB-535 (T. 6 S., R. 1 W.), located in the approximate center of pumping, declined about 20 feet per year from 12 ft to a low of 133 feet below land surface in May 1958.

"1,500-FOOT" SAND

Physical properties. Except in the industrial district, the "1,500-foot" sand underlies East Baton Rouge and West Baton Rouge Parishes (pl. 1). Two or three sands separated by clay units normally comprise the "1,500-foot" sand in the vicinity of the industrial district; however, the clay beds are not areally extensive and the sands are hydraulically connected. The aquifer has a maximum thickness of 300 feet in the eastern part of East Baton Rouge Parish, and an average thickness of 100 feet in the project area. The "1,500-foot" sand coalesces with the "1,700-foot" sand in southeastern West Baton Rouge Parish (pl. 1).

The sediments of the "1,500-foot" sand are olive gray to yellowish gray in color. The sand is primarily of medium grain size; 10 percent or less of the material is fine grained.

Hydrologic properties. Of the inventoried wells listed in table 3 for the "1,500 foot" sand, 65 are in use. Five of these are screened in more than one aquifer. The location of wells screened in the "1,500-foot" sand in and near the industrial district are shown on figure 19. The yields from 6 representative public-supply and industrial wells that are screened only in the "1,500-foot" sand range from 300 to 1,200 gpm, and average 830 gpm. Specific capacities of wells in the "1,500-foot" sand, corrected for head loss in the pipe, range from 14.7 to 54.7 gpm per foot of drawdown (table 2) and average 33.2 gpm per foot of drawdown.

The coefficients of transmissibility as determined from two pumping tests are 76,500 and 90,400 gpd per foot. On the basis of the aquifer's thickness, the coefficients of permeability are 960 and 1,160 gpd per square foot. The tests were recovery tests on the pumped well and it was not possible to determine the coefficient of storage. As the "1,500-foot" sand is an artesian aquifer, the coefficient of storage probably will range between 1×10^{-3} and 1×10^{-4}.

Quality of water. Fresh-water-bearing sands of the "1,500-foot" sand yield water that is alkaline, soft, and of sodium bicarbonate type (table 1). The total iron content of the water from 8 wells (excluding well EB-280) ranged from 0.02 ppm to 0.35 ppm. (See table 1.) Except for wells EB-250 and -569 (T. 7 S., R. 1 W.), the chloride content of water from the "1,500-foot" sand ranged from 4.0 to 7.0 ppm. As indicated by the analyses data of samples from wells EB-280 and -569 (table 1), the chloride content of water from wells in the south-central part of the area ranged from 201 to 3,050 ppm. The dissolved solids in water from wells in this part of the project area ranged from 656 to 5,290 ppm. In the remainder of the area, the dissolved-solids content ranged from 193 to 250 ppm. The temperature of the water generally ranges from 82° to 89° F.

Withdrawals. During the first half of 1959 pumpage from the "1,500-foot" sand averaged 7.6 mgd, which rep-

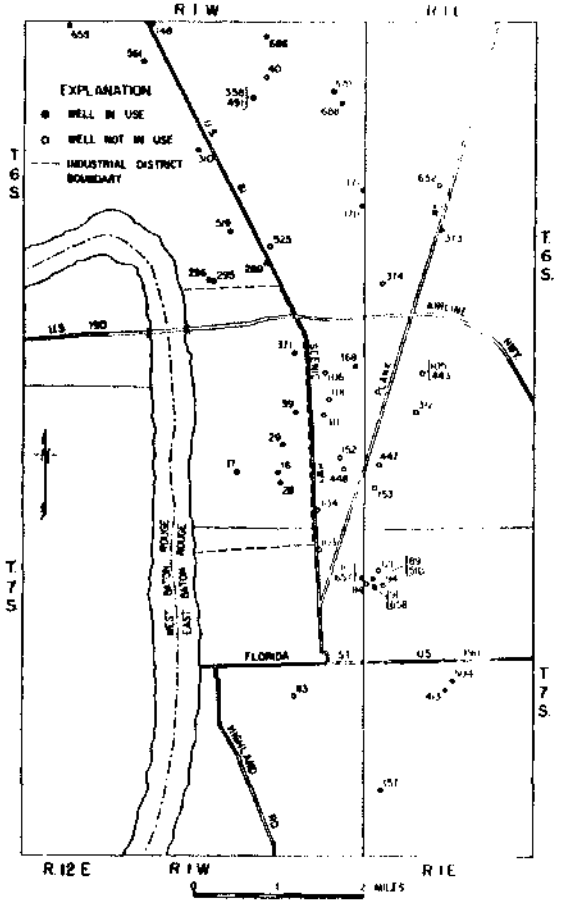


Figure 19. Map showing location of wells screened in the "1,600-foot" sand in and near the Baton Rouge industrial district.

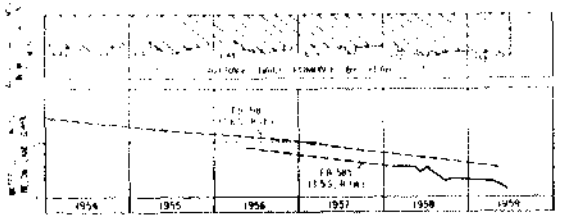


Figure 20. Graphs showing relation of pumpage to water levels in wells screened in the "1,500-foot" sand in the Baton Rouge area.

resents an increase of 1 mgd since 1954. Approximately 85 percent (6.2 mgd) of the water pumped is for public supply in Baton Rouge; industries use approximately 1.3 mgd. Of the inventoried domestic wells in use in 1959, 24 are screened in the "1,500-foot" sand. However, only small quantities of water are pumped from these wells and they are not considered in the total pumpage. Two irrigation wells (ER-157, T. 7 S., R. 1 E., and -348, T. 6 S., R. 1 E.) contribute a small amount to the total pumpage.

Effects of pumping. As shown by the water-level records (table 3) for well EB-94 (T. 7 S., R. 1 E.), the annual water-level decline since 1940 has been about 6 feet in wells near the center of pumping from the "1,500-foot" sand. The relation of pumpage to water levels in wells at different distances from the center of pumping is shown by figure 20. It can be seen that the rate of decline in areas about 6 miles north (well EB-585, T. 5 S., R. 1 W.) and about 7 miles east (ER-318, T. 6 S., R. 1 E.) of the industrial district is the same (3.6 feet per year).

"1,700-FOOT" SAND

Physical properties. The aquifer named the "1,700-foot" sand in the Baton Rouge industrial district is considered to be of Pliocene(?) age. It is irregular in occurrence (pl. 1), and in several areas clay occurs in the same interval. In the northwest corner of East Baton Rouge Parish the unit is represented by a sand 240 feet thick, but eastward the facies change to clay. In southeast East Baton Rouge Parish a maximum thickness of 130 feet con-

sutiutes the "1,700 foot" sand. In the industrial district the aquifer is 120 feet thick. Southwest of the industrial district the "1,700-foot" sand connects with the "1,800-foot" sand (pl. 1).

Cumulative curves of the "1,700 foot" sand indicate it to be primarily a medium grained sand, less than 20 percent being fine-grained material. Its appearance is the same as that of other sands of Pliocene(?) and Pleistocene age.

Hydrologic properties. Of the wells listed in table 3, 32 are screened in the "1,700-foot" sand and are in use. Of these 32 wells, 8 are screened in more than one aquifer. Twenty-eight wells are for domestic or public supply and 4 are owned by industries. The location of the "1,700-foot" wells in and near the industrial district are shown on figure 21.

Reported yields from two industrial wells whose screens are 6 inches, or more, in diameter are 1,000 gpm (EB-68, T. 6 S., R. 1 W.) and 850 gpm (EB-73, T. 6 S., R. 1 W.). Specific capacities of two wells screened in the "1,700 foot" sand are 41.6 gpm per foot of drawdown (corrected for head loss) (EB-68) and 16.8 gpm per foot of drawdown (uncorrected) (EB-282, T. 7 S., R. 1 E.). (See table 2.) The coefficient of transmissability as determined from a recovery test made in well EB-68 in the industrial district is 32,000 gpd per foot. On the basis of the aquifer's thickness, the coefficient of permeability is 270 gpd per square foot (table 2).

Quality of water. The "1,700-foot" sand yields water that is alkaline, soft, and of sodium bicarbonate type (table 4). The total iron content in water tested ranged from 0.01 to 0.04 ppm. Chloride content of the water ranged from 3.2 to 5.0 ppm and the dissolved solids content ranged from 197 to 235 ppm. Silica occurred in sufficient quantities (21 to 45) to cause scaling when the water is used as low-pressure boiler feed (Hem, 1959, p. 254). The temperature of the water from the "1,700-foot" sand ranges from 80° to 87° F and in the industrial district, from 84° to 86° F. Electrical logs of oil test wells indicate that the dissolved-solids content of water from this aquifer in the southern part of the area probably is more than

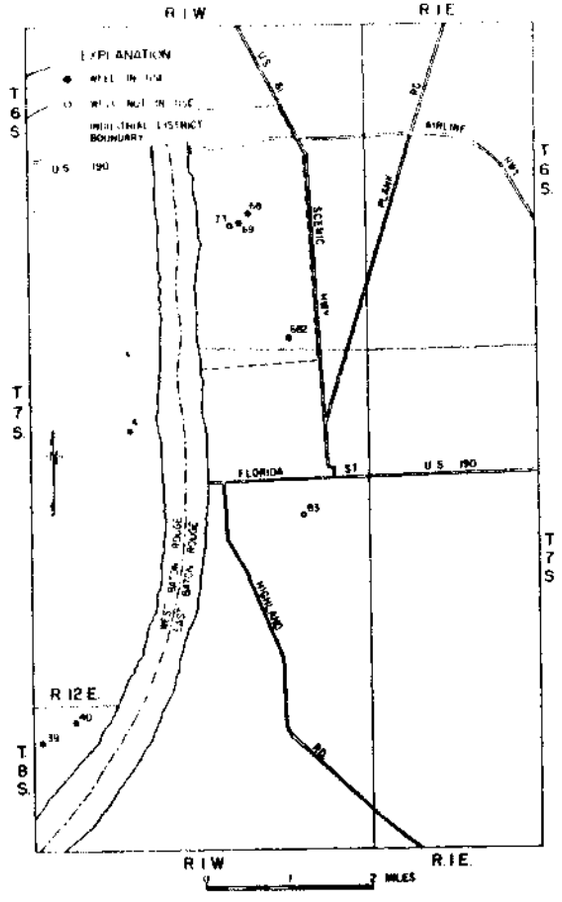


Figure 21. Map showing location of wells screened in the "1,700 foot" sand in and near the Baton Rouge industrial district.

1,000 ppm and the water may be unsuitable for domestic and municipal uses (U.S. Public Health Service, 1946, p. 383).

Withdrawals. Since 1953, estimated withdrawals from the "1,700-foot" sand have increased from 4.1 mgd to 7.0 mgd. The major users of the water are industries and the town of Port Allen. Although 17 wells in this aquifer are used for domestic supply, the quantity pumped is small and is not considered in the total pumpage figures.

Effects of pumping. Long-term water-level measurements are not available for the "1,700-foot" sand. The water level in well EB-68 (T. 6 S., R. 1 W.) in the industrial district is reported to have declined at a rate of about 4 feet per year since 1953, and the water level stood at 90 feet below land surface on January 7, 1959.

"2,000-FOOT" SAND

Physical properties. The "2,000-foot" sand is considered the uppermost aquifer of Miocene age in the Baton Rouge area. Except for a small part of north-central East Baton Rouge Parish and the south-central part of the project area, this sand underlies most of the area (pl. 1). In the vicinity of the industrial district and immediately northwestward this aquifer is divided by local clay lenses into three separate sand units; generally, however, the "2,000-foot" sand occurs as a single unit broken only by a few clay lenses.

Except for the northern quarter and the extreme south-central part of the area, and west of the industrial district, the thickness of the "2,000-foot" sand normally is 150 feet or more. The sand has a maximum thickness of 300 feet in the industrial district and southeastern East Baton Rouge Parish.

The "2,000-foot" sand apparently has no direct hydraulic connection with the overlying "1,700-foot" sand or the underlying "2,400-foot" sand; however, the original static (nonpumping) levels in the "2,000-foot," "2,400-foot," and "2,800-foot" sands were nearly the same and indicate a common recharge area.

The "2,000-foot" sand is light gray to light brownish gray, and is generally of medium grain size, averaging less than 20 percent fine-grained material.

Hydrologic properties. Of the wells listed in table 3, 44 are screened in the "2,000-foot" sand and were in use in 1959. Four of these are multiple-screen wells. Wells screened in the "2,000-foot" sand in and near the Baton Rouge industrial district are shown on figure 22. Yields from 13 public supply and industrial wells screened only in the "2,000-foot" sand range from 870 gpm to 1,800 gpm and average 1,200 gpm. The specific capacities for five wells, corrected for head loss due to pipe friction, range from 31.5 to 94.7 gpm per foot of drawdown and average 48.8 gpm per foot of drawdown (table 2).

Results of four pumping tests indicate a range in the coefficient of transmissibility from 160,000 to 243,000 gpd per foot (table 2) and an average of 205,000 gpd per foot. The coefficient of permeability ranges from 1,100 to 1,500 gpd per square foot and averages 1,250 gpd per square foot. The coefficients of storage determined for two wells are 7.1×10^{-4} and 6.2×10^{-4}.

Quality of water. The "2,000-foot" sand of Baton Rouge yields water that is soft, alkaline, and of sodium bicarbonate type (table 1). Except for the water from a well (EB-304, T. 5 S., R. 2 E.) near the eastern boundary of the report area, the total iron in water from this sand ranged from 0.00 to 0.23 ppm. The manganese content of water in the industrial district was less than 0.02 ppm. With the exception of water from irrigation well EB-575 (T. 8 S., R. 1 W.), south of the city of Baton Rouge, the chloride content of water from the "2,000-foot" sand generally was less than 6.0 ppm. However, that in well EB-575 increased from 196 ppm in 1955 to 224 ppm in April 1959. This increase probably was the result of movement of more highly mineralized water because of local pumping. The sand contains fresh water to the south-central boundary of the report area (well 6, pl. 1), where well EB-575 is screened in this sand. The temperature of water from the "2,000-foot" sand in the project area ranges from 85° to 96°F and in the industrial district, from 88° to 92°F.

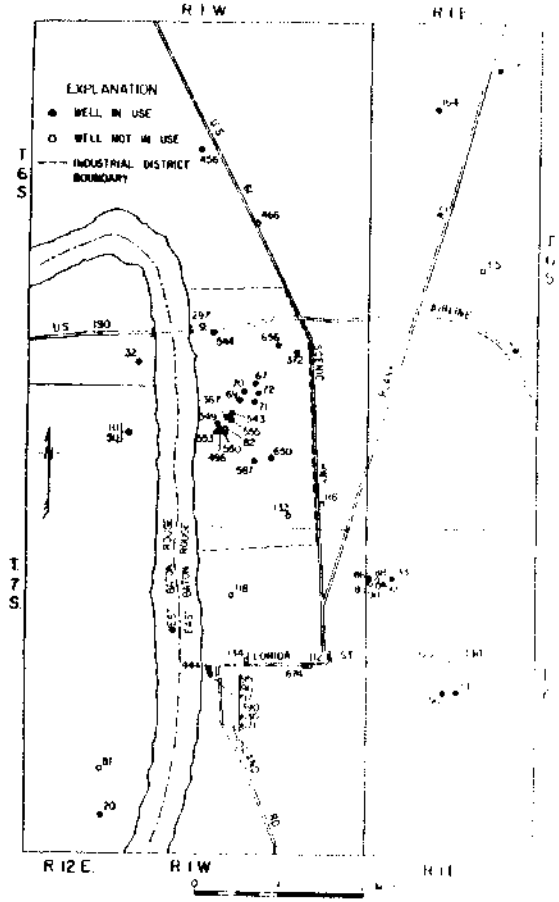


Figure 22. Map showing location of well [illegible] "2,000-foot" sand in and near the Baton Rouge industrial district

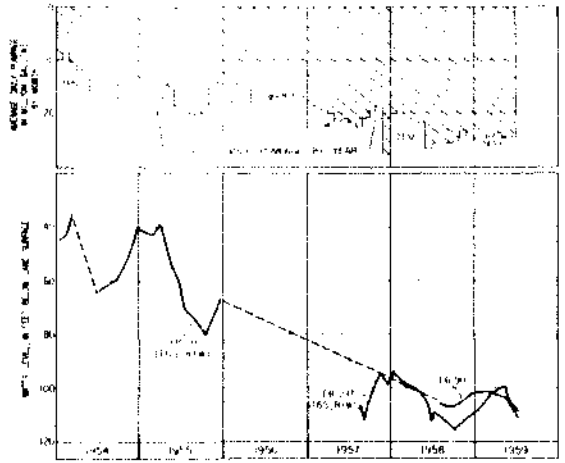


Figure 23. Graphs showing relation of pumpage to water levels in wells screened in the "2,000-foot" sand in the Baton Rouge area.

Withdrawals. The "2,000-foot" sand is one of the most important aquifers of the Baton Rouge area, yielding more than one fourth of the ground water used for industry and public supply. As shown on figure 23, an average of 24.5 mgd was pumped from this sand during the period January–July 1959. This pumpage rate was slightly greater than that from the "400-" and "600-foot" aquifers during the same period. In 1954, 13.5 mgd was pumped from the "2,000-foot" sand and in 1959 the average pumpage was 24.5 mgd, an increase of 11 mgd in a 5-year period. One-quarter of the water pumped from the "2,000-foot" sand in 1959 (6 mgd) was used for public supply in Baton Rouge; the remainder was used by industries. Six domestic wells that now use the "2,000-foot" sand as a source of supply produce an insignificant amount of water.

Effects of pumping. As shown by the hydrograph (fig. 23) for well ER-90 (T. 7 S., R. 1 E.), water levels have declined at an annual rate of 13 feet during the

period Jan. 1954-June 1959. This well is immediately southeast of the industrial district but is in an area where several nearby public-supply wells produced from the "2,000-foot" sand. Since 1957 pumping from nearby wells decreased drastically and the subsequent fluctuations in this well primarily are the result of regional withdrawals. During 1958-59 the annual rate of decline in this well decreased to 4 feet. The rate of decline during the same 2 years in well EB-297 (T. 6 S., R. 1 W.), located along the northern perimeter of the industrial district, was 5 feet per year (fig. 23). If pumping continues to increase, water levels will continue to decline at a comparable rate; however, if withdrawals are stabilized, the rate of decline will decrease and water levels will approach equilibrium.

"2,400-FOOT" SAND

Physical properties. With the exception of a small area west of the industrial district, the "2,400-foot" sand underlies most of the project area. The thickness of the "2,400-foot" sand ranges from 80 feet in northwestern East Baton Rouge Parish to 260 feet in northeastern East Baton Rouge Parish. In southeastern East Baton Rouge Parish this aquifer is connected with the "2,800-foot" sand (pl. 1).

Cumulative curves of material from the "2,400-foot" sand show it to be fine- to medium-grained, containing lenses of coarse sand. The olive-gray to yellowish-gray color is similar to that of the "2,000-foot" and "2,800-foot" sands.

Hydrologic properties. As of June 1959, a total of 25 wells screened in the "2,400-foot" sand were in use (see table 3.) Three of these wells are screened in more than one sand. Wells screened in the "2,400-foot" sand in and near the industrial district are shown on figure 24.

The yields of 6 industrial wells screened only in the "2,400-foot" sand range from 600 to 1,140 gpm and average 1,000 gpm. Specific capacities of 3 wells, corrected for head loss due to pipe friction, range from 15.9 to 15.5 gpm per foot of drawdown (table 2).

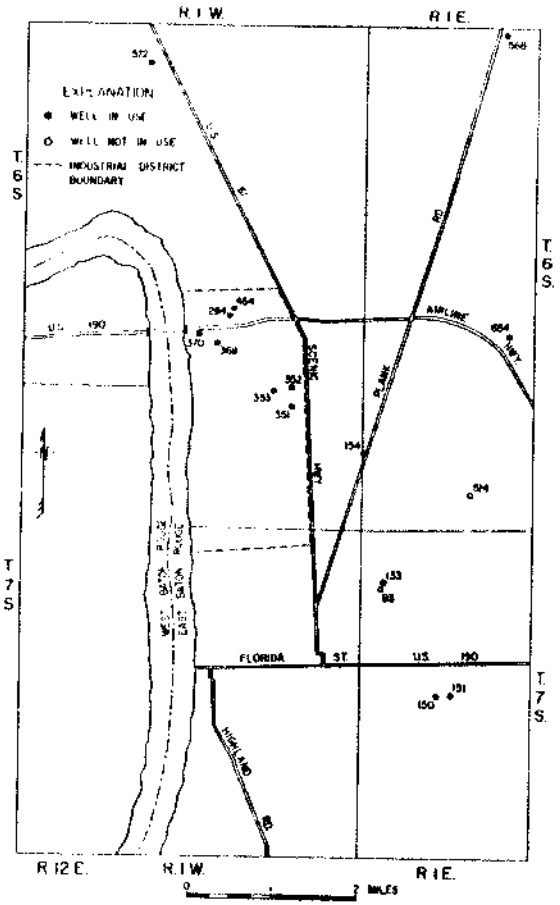


Figure 24. Map showing location of wells screened in the "2,400-foot" sand in and near the Baton Rouge industrial district.

REFERENCE 30

2 of 3

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary

WEATHER BUREAU
F.W. Reichelderfer, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

NOTICE
Rainfall frequency information for durations of 1 hour and less for the Central and Eastern States has been superseded by NOAA Technical Memorandum NWS HYDRO-35 Five to Sixty-Minute Precipitation Frequency for the Eastern and Central United States. This publication (Accession No. PB 272 117/AS) is obtainable from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

THIS ATLAS IS OBSOLETE FOR THE FOLLOWING 11 WESTERN STATES: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOAA ATLAS 2: PRECIPITATION-FREQUENCY ATLAS OF THE WESTERN UNITED STATES (GPO: 11 Vols., 1973) supersedes the Technical Paper 40 data for these states.

All but 3 of the 11 state volumes are out of print, and no reprint is presently planned.

Institutions in the eleven western states likely to have copies of these volumes for their state for public inspection are:

US Department of Agriculture Soil Conservation Service Offices
US Army Corps of Engineers Offices
Selected University Libraries
National Weather Service Offices (may also have volumes for adjacent states).
National Weather Service Forecast Offices (may have all eleven volumes)

Elsewhere, libraries of universities where hydrology and meteorology degree programs are offered may shelve some of the eleven volumes.

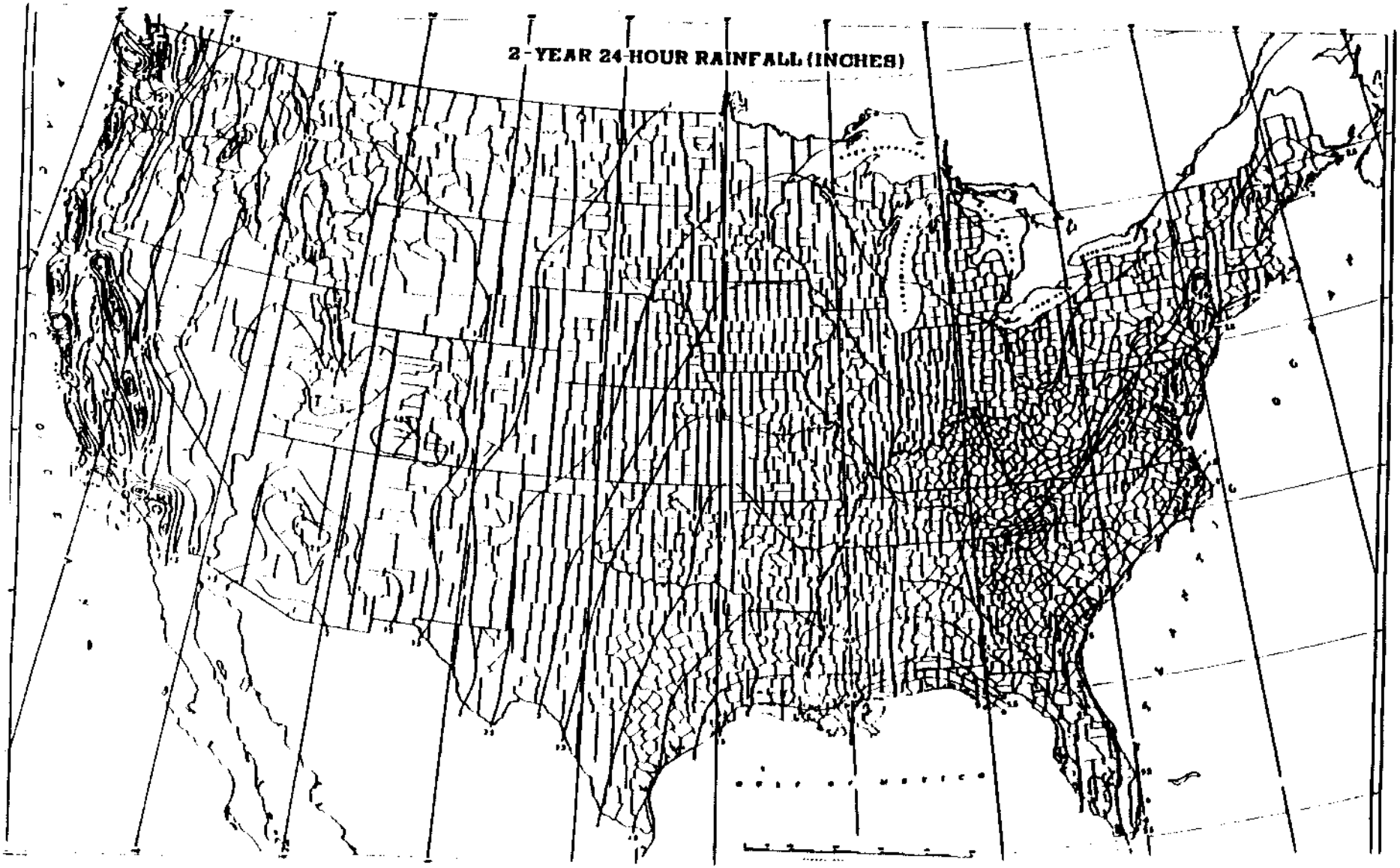
The three volumes in print as of 1 Jan 1983 at the GPO are:

Vol	State	GPO Stock Number	Price
IV	New Mexico	003-017-00158-0	$10.00
VI	Utah	003-017-00160-1	12.00
VII	Nevada	003-017-00161-0	9.50

The GPO order number is 202-783-3238 for VISA and MASTERCARD orders which

8011

WASHINGTON, D.C.
May 1961


2-YEAR 24-HOUR RAINFALL (INCHES)

REFERENCE 31

RECORD OF COMMUNICATION

Reference 31

TYPE: Telephone Call **DATE:** 4-26-89 **TIME:** 10:10-10:25 a.m.

TO: Cathy LeBlanc
Baton Rouge Water Department
Baton Rouge, Louisiana

FROM: Jeffrey E. Patterson
FIT Chemist
U.S. EPA Region VI
ICF Technology, Inc.
(214) 744-1641

SUBJECT: City of Baton Rouge Water Supply

SUMMARY OF COMMUNICATION:

Ms. LeBlanc, who works in the Engineering Department, gave me the following locations and information on wells closest to Highway 190 at the Mississippi River. The city has 53 wells, though most of them are located away from the city.

Location	Total Depth	Screened Aquifer	Capacity
North 4th St.	2585 feet	2400 feet sand	1000 gpm
North 4th St.	2262 feet	2000 feet sand	1000 gpm
South 17 St.	2295 feet	2000 feet sand	1000 gpm
Robin St.	1413 feet	1500 feet sand	1000 gpm
Robin St.	2649 feet	2800 feet sand	1000 gpm
Robin St.	1934 feet	2000 feet sand	1000 gpm
Bankston St.	1206 feet	1000 feet sand	1000 gpm
	1153 feet	1000 feet sand	1000 gpm
	2382 feet	2000 feet sand	1000 gpm
	1168 feet	1000 feet sand	1000 gpm
	2369 feet	2000 feet sand	1000 gpm
	2383 feet	2000 feet sand	1000 gpm

Ms. LeBlanc gave me her mailing address as: Water Works, P.O. Box 64808, Baton Rouge, Louisiana 70896, and her street address as: 8755 Goodwood Blvd., 3rd Floor, Rm 334.

She suggested another source of information as the Capital Area Groundwater Conservation Commission at 6554 Florida Blvd. Mr. Caldwell, a retired geologist, is the director. The phone number is (504) 924-7420. If Mr. Caldwell is not in, Shawn, the secretary, may be of assistance.

Ms. LeBlanc said that Exxon has some monitor wells in this area and may be another source of information.

Ms. LeBlanc says the Mississippi River is not used as a drinking water source

REFERENCE 32

```
IF DEVIL-SW=7046 THEN
IKJ56545I THIS STATEMENT HAS AN EXPRESSION WITH A CHARACTER DATA ITEM US
ED NUMERICALLY
READY <---- STORET PRCNPT
wqab sitehelp
ATTEMPTING ENTRY TO WATER QUALITY ANALYSIS
BRANCH SOFTWARE PACKAGE - SITEHELP

VERSION ACTIVE 16 NOV 1988

************************************************************
*                                                          *
* >>>>    SITEHELP USES NEW REACH STRUCTURE FILE  <<<<     *
*                                                          *
* ********************************************************
* >>>>    IMPORTANT: "REACH" COMMAND IS CHANGED <<<<       *
* ********************************************************
*                                                          *
* >>>>    USE "HELP" COMMAND FOR LATEST INFO      <<<<     *
*                                                          *
************************************************************

RESULTS FILE NAME?
devilsl
 Esc for ATtention, Home to SWitch    ¤      Capture Off          ¤   Local
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* >>>>    USE "HELP" COMMAND FOR LATEST INFO      <<<<  *
*                                                       *
*********************************************************

RESULTS FILE NAME?
devilsl
RESULTS FILE NEW OR OLD?
new
IF YOU SHOULD HAVE TROUBLE, FIRST CHECK YOUR REGION SIZE
AAOSTP03 STEPLIB set
DO YOU WANT GRAPHICS CODES OUTPUT(Y/N)?
n
USER NAME?
bcz
OPTION?
FIND 303335 911330 .1
08070100004  MISSISSIPPI R
08070201015  BAYOU BATON ROUGE
OPTION?
FIND 303335 911330 .04
08070100004  MISSISSIPPI R
08070201015  BAYOU BATON ROUGE
OPTION?

 Esc for ATtention, Home to SWitch    ¤      Capture Off        ¤   Local
```

COMMAND — LAT — LON — search near reach within .4 sq MI; 2 reaches found; search nearest reach within .04 sq MI *; 2 reaches found.

* .04 = .04 sq MILES
.1 = .4
1 = 4
2 = 16
4 = 32

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new
IF YOU SHOULD HAVE TROUBLE, FIRST CHECK YOUR REGION SIZE
AAOSTP03 STEPLIB set
DO YOU WANT GRAPHICS CODES OUTPUT(Y/N)?
n
USER NAME?
bcz
OPTION?
FIND 303335 911330 .1
08070100004  MISSISSIPPI R
08070201015  BAYOU BATON ROUGE
OPTION?
FIND 303335 911330 .04
08070100004  MISSISSIPPI R
08070201015  BAYOU BATON ROUGE
OPTION?
END
AAOSTP01 DELETE requested
AAOSTP08 STEPLIB deleted
SITEHELP ENDED
READY

READY
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END
AAOSTP01 DELETE requested
AAOSTP08 STEPLIB deleted
SITEHELP ENDED
READY

READY
WQAB PATHSCAN
ATTEMPTING ENTRY TO WATER QUALITY ANALYSIS
BRANCH SOFTWARE PACKAGE - PATHSCAN

VERSION ACTIVE 2 OCTOBER 1984

STATE DATA IS NOW DISPLAYED WHERE AVAILABLE
  (CURRENTLY ONLY IN KANSAS).

RF(1/2) OR END: 2

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):  R=08070100004
UP/DOWN(U/D)?  D
 Esc for ATtention, Home to SWitch    ¤      Capture Off          ¤   Local
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NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

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UP/DOWN(U/D)?  D
TERMINATION EXPRESSION OPTIONS
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L=+XX    FOR STOP AFTER XX LEVEL CHANGES
R=, P=, ETC. FOR STOP AT DESIGNATED LOCATION

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TERM EXP?
REACHES ONLY(Y/N)?  N
REPORT ON DRINKS(Y/N)?  Y
INVALID POINT DESIGNATOR

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):
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REPORT ON DRINKS(Y/N)?  Y
INVALID POINT DESIGNATOR

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

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R=, P=, ETC. FOR STOP AT DESIGNATED LOCATION

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TERM EXP?
REACHES ONLY(Y/N)?  N
REPORT ON DRINKS(Y/N)?  Y
DATE 920219    TIME 124015
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        25 PIPES
         0 PLANTS-INTAKES-SOURCES
DETAIL(Y/N)?
 Esc for ATtention, Home to SWitch    ¤      Capture Off      ¤   Local
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REPORT ON DRINKS(Y/N)?  Y
INVALID POINT DESIGNATOR

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):  R=08070201015
UP/DOWN(U/D)?  D
TERMINATION EXPRESSION OPTIONS
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L=+XX    FOR STOP AFTER XX LEVEL CHANGES
R=, P=, ETC. FOR STOP AT DESIGNATED LOCATION

TERM EXP(CONNECTORS WILL BE "OR")? M=15
TERM EXP?
REACHES ONLY(Y/N)?  N
REPORT ON DRINKS(Y/N)?  Y
DATE 920219    TIME 124015
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        25 PIPES
         0 PLANTS-INTAKES-SOURCES
DETAIL(Y/N)?  Y
 Esc for ATtention, Home to SWitch    ¤ Capture On, 409K free    ¤   Local
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GD)    2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T
GD)       1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T
GD)   78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)    2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)      59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T
GD)     180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T
GD)      -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0036421 E BATON ROUGE CITY-PAR (CEON   FLOW(T
GD)   11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T
GD)   11500.00 -B SIC  2061   -1   -1

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):
 Esc for ATtention, Home to SWitch    ¤ Capture On, 405K free    ¤   Local
```

```
     6.16 PIPE  1 NPDES# LA0020541 PORT ALLEN, CITY OF       ON   FLOW(T
GD)    2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T
GD)       1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T
GD)   78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)    2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)      59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T
GD)     180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T
GD)      -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0036421 E BATON ROUGE CITY-PAR (CEON   FLOW(T
GD)   11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T
GD)   11500.00 -B SIC  2061   -1   -1

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):
 Command? CA OFF*
```

```
     6.16 PIPE  1 NPDES# LA0020541 PORT ALLEN, CITY OF       ON   FLOW(T
GD)    2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T
GD)       1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T
GD)   78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)    2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)      59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T
GD)     180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T
GD)      -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0036421 E BATON ROUGE CITY-PAR (CEON   FLOW(T
GD)   11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T
GD)   11500.00 -B SIC  2061   -1   -1

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):
 Information is still in the capture buffer. Do you want to save it (Y/N)?_
```

```
     6.16 PIPE  1 NPDES# LA0020541 PORT ALLEN, CITY OF       ON   FLOW(T
GD)    2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T
GD)       1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T
GD)   78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)    2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)      59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T
GD)     180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T
GD)      -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0036421 E BATON ROUGE CITY-PAR (CEON   FLOW(T
GD)   11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T
GD)   11500.00 -B SIC  2061   -1   -1

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):
 Write capture buffer to what file? F:\USER\BCANELLA\DEVILSL
```

```
     6.16 PIPE  1 NPDES# LA0020541 PORT ALLEN, CITY OF       ON   FLOW(T
GD)    2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T
GD)       1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T
GD)   78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)    2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)      59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T
GD)     180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T
GD)      -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0036421 E BATON ROUGE CITY-PAR (CEON   FLOW(T
GD)   11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T
GD)   11500.00 -B SIC  2061   -1   -1

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
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STARTING POINT OR END (RF IS 2):
 Esc for ATtention, Home to SWitch    ¤      Capture Off      ¤   Local
```

```
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T
GD)   11500.00 -B SIC  2061   -1   -1

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
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STARTING POINT OR END (RF IS 2):  R=08070100004
UP/DOWN(U/D)? D
TERMINATION EXPRESSION OPTIONS
------------------------------
M=XXX   FOR STOP AT XXX MILES
L=+XX    FOR STOP AFTER XX LEVEL CHANGES
R=, P=, ETC. FOR STOP AT DESIGNATED LOCATION

TERM EXP(CONNECTORS WILL BE "OR")? M=15
TERM EXP?
REACHES ONLY(Y/N)? N
REPORT ON DRINKS(Y/N)? Y
DATE 920219    TIME 124825
         4 REACHES
        24 PIPES
         0 PLANTS-INTAKES-SOURCES
DETAIL(Y/N)?
 Esc for ATtention, Home to SWitch    ¤      Capture Off          ¤   Local
```

```
     6.16 PIPE  1 NPDES# LA0020541 PORT ALLEN, CITY OF       ON   FLOW(T
GD)    2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T
GD)       1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T
GD)   78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)    2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T
GD)      59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T
GD)     180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T
GD)      -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0036421 E BATON ROUGE CITY-PAR (CEON   FLOW(T
GD)   11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T
GD)   11500.00 -B SIC  2061   -1   -1

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):
 Write capture buffer to what file? F:\USER\BCANELLA\DEVIL2
```

```
NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL
ARE USED AND COUNTED BUT ARE NOT SHOWN.
ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STARTING POINT OR END (RF IS 2):  END
RF(1/2) OR END: END
PATHSCAN ENDED
READY
LOGOFF
IKJ56500I COMMAND LOGOFF NOT FOUND
READY
END
READY
LOGOUT
IKJ56500I COMMAND LOGOUT NOT FOUND
READY
END
READY
LOGOFF
BCZ:A704 LOGGED OFF WEDNESDAY 02/19/92 AT 12:55:26
CPU: TCB :05.78, SRB :00.41, TOTAL :06.19
IO: DISK 647, TERM 706, TOTAL 1353
COST: CPU $1.00, I/O $.30, TOTAL $1.30

 Esc for ATtention, Home to SWitch    ¤      Capture Off          ¤   Local
```

STORET PRINTOUT FOR DEVIL'S SWAMP LAKE
STARTING AT NEAREST REACH 08070100004 AND 15 MILES DOWNSTREAM

```
00000.00  08070100004   0.00  LM:   0.00  HM:   0.00  TYPE R  LEV 1  LEN GTH  22.00  NAME MISSISSIPPI R
                                0 DISCHARGES
     0.00 GAGE WEG08070100004        ?                    STCO    -1 DA      -1 ?   MF(CFS) 467266 LF(CFS) 100985

00000.00  08070100003   0.00  LM:   0.00  HM:   1.20  TYPE R  LEV 1  LEN GTH   1.20  NAME MISSISSIPPI R
                                3 DISCHARGES
     0.33 PIPE  1 NPDES# LA0000833 DELTECH CORP              OFF  FLOW(T GD)    1270.00 -C SIC  2865   -1   -1
     0.33 PIPE  1 NPDES# LA0003905 LA CHEMICAL POLYMERS INC  OFF  FLOW(T GD)    3200.00 -B SIC  2821   -1   -1
     0.33 PIPE  1 NPDES# LA0005479 PAXON POLYMAR COMPANY, L.POFF  FLOW(T GD)     860.00 -P SIC  2821   -1   -1
     1.20 GAGE WEG08070100003        ?                    STCO    -1 DA      -1 ?   MF(CFS) 467318 LF(CFS) 100991

00001.20  08070100002   0.00  LM:   0.00  HM:   2.80  TYPE R  LEV 1  LEN GTH   2.80  NAME MISSISSIPPI R
                               12 DISCHARGES
     2.20 PIPE  1 NPDES# LA0005401 EXXON CHEM CO-BATON ROUGE ON   FLOW(T GD)    8840.00 -B SIC  2869   -1   -1
     2.30 PIPE  1 NPDES# LA0032867 USA-RESERVE CENTER (BATON ON   FLOW(T GD)       2.50 -P SIC  7542   -1   -1
     2.85 PIPE  1 NPDES# LA0005223 RHONE-POULENC BASIC CHEMICON   FLOW(T GD)     270.00 -P SIC  2819   -1   -1
     2.85 PIPE  2 NPDES# LA0005223 RHONE-POULENC BASIC CHEMICON   FLOW(T GD)    1950.00 -B SIC  2819   -1   -1
     2.85 PIPE  1 NPDES# LA0005398 GULF STATES UTILITIES-LA SON   FLOW(T GD)    3100.00 -C SIC  4911   -1   -1
     2.85 PIPE  1 NPDES# LA0005622 IDEAL BASIC INDUSTRIES-E BON   FLOW(T GD)       0.60 -P SIC  3241   -1   -1
     2.85 PIPE  2 NPDES# LA0005622 IDEAL BASIC INDUSTRIES-E BON   FLOW(T GD)      23.00 -B SIC  3241   -1   -1
     2.85 PIPE  2 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)     140.00 -P SIC  2869   -1   -1
     2.85 PIPE  3 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)     560.00 -P SIC  2812   -1   -1
     2.85 PIPE  4 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)    7490.00 -P SIC  2812   -1   -1
     2.85 PIPE  5 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)   47200.00 -P SIC  2812   -1   -1
     3.76 PIPE  1 NPDES# LA0039390 PLACID REFINING CO-PORT ALON   FLOW(T GD)     288.00 -P SIC  2911   -1   -1
     4.00 GAGE WEG08070100002        ?                    STCO    -1 DA      -1 ?   MF(CFS) 467338 LF(CFS) 100993

00004.00  08070100007   0.00  LM:  36.10  HM:  47.10  TYPE R  LEV 1  LEN GTH  47.10  NAME MISSISSIPPI R
                                9 DISCHARGES
     6.16 PIPE  1 NPDES# LA0020541 PORT ALLEN, CITY OF       ON   FLOW(T GD)    2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T GD)       1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T GD)   78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T GD)    2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC        ON   FLOW(T GD)      59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T GD)     180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T GD)      -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0038421 E BATON ROUGE CITY-PAR (CEON   FLOW(T GD)   11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT DVN-LAW ON   FLOW(T GD)   11500.00 -B SIC  2061   -1   -1
```

NON-TRANSPORT REACHES OCCURRING AS PART OF A HYDROLOGICAL RETRIEVAL ARE USED AND COUNTED BUT ARE NOT SHOWN. ALL DATA ARE AGGREGATED BY ASSOCIATED TRANSPORT REACH.

STORET PRINTOUT FOR DEVIL'S SWAMP LAKE
STARTING AT NEAREST REACH 08070201015 AND 15 MILES DOWNSTREAM

```
00000.00  08070201015   0.00  LM:   0.00  HM:   0.00  TYPE S  LEV 2  LEN GTH   9.50  NAME BAYOU BATON ROUGE
                                1 DISCHARGE
     0.00 GAGE WEG08070201015       ?                        STCO    -1 DA      -1 ?   MF(CFS)      51 LF(CFS)      6
     0.00 PIPE  1 NPDES# YCRCLA451 PETRO-PROCESSORS OF LOUISI?    FLOW(T GD)       -1.00 -? SIC  8999   -1   -1

00000.00  08070100003   0.00  LM:   0.00  HM:   1.20  TYPE R  LEV 1  LEN GTH   1.20  NAME MISSISSIPPI R
                               3 DISCHARGES
     0.33 PIPE  1 NPDES# LA0000833 DELTECH CORP                OFF  FLOW(T GD)     1270.00 -C SIC  2865   -1   -1
     0.33 PIPE  1 NPDES# LA0003905 LA CHEMICAL POLYMERS INC    OFF  FLOW(T GD)     3200.00 -B SIC  2821   -1   -1
     0.33 PIPE  1 NPDES# LA0005479 PAXON POLYMAR COMPANY, L.POFF  FLOW(T GD)      860.00 -P SIC  2821   -1   -1
     1.20 GAGE WEG08070100003       ?                        STCO    -1 DA      -1 ?   MF(CFS) 467318 LF(CFS) 100991

00001.20  08070100002   0.00  LM:   0.00  HM:   2.80  TYPE R  LEV 1  LEN GTH   2.80  NAME MISSISSIPPI R
                              12 DISCHARGES
     2.20 PIPE  1 NPDES# LA0005401 EXXON CHEM CO-BATON ROUGE ON   FLOW(T GD)     8840.00 -B SIC  2869   -1   -1
     2.30 PIPE  1 NPDES# LA0032867 USA-RESERVE CENTER (BATON ON   FLOW(T GD)        2.50 -P SIC  7542   -1   -1
     2.85 PIPE  1 NPDES# LA0005223 RHONE-POULENC BASIC CHEMICON   FLOW(T GD)      270.00 -P SIC  2819   -1   -1
     2.85 PIPE  2 NPDES# LA0005223 RHONE-POULENC BASIC CHEMICON   FLOW(T GD)     1950.00 -B SIC  2819   -1   -1
     2.85 PIPE  1 NPDES# LA0005398 GULF STATES UTILITIES-LA SON   FLOW(T GD)     3100.00 -C SIC  4911   -1   -1
     2.85 PIPE  1 NPDES# LA0005622 IDEAL BASIC INDUSTRIES-E BON   FLOW(T GD)        0.60 -P SIC  3241   -1   -1
     2.85 PIPE  2 NPDES# LA0005622 IDEAL BASIC INDUSTRIES-E BON   FLOW(T GD)       23.00 -B SIC  3241   -1   -1
     2.85 PIPE  2 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)      140.00 -P SIC  2869   -1   -1
     2.85 PIPE  3 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)      560.00 -P SIC  2812   -1   -1
     2.85 PIPE  4 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)     7490.00 -P SIC  2812   -1   -1
     2.85 PIPE  5 NPDES# LA0006149 FORMOSA PLASTICS CORP-BATOON   FLOW(T GD)    47200.00 -P SIC  2812   -1   -1
     3.76 PIPE  1 NPDES# LA0039390 PLACID REFINING CO-PORT ALON   FLOW(T GD)      288.00 -P SIC  2911   -1   -1
     4.00 GAGE WEG08070100002       ?                        STCO    -1 DA      -1 ?   MF(CFS) 467338 LF(CFS) 100993

00004.00  08070100007   0.00  LM:  36.10  HM:  47.10  TYPE R  LEV 1  LEN GTH  47.10  NAME MISSISSIPPI R
                               9 DISCHARGES
     6.16 PIPE  1 NPDES# LA0020541 PORT ALLEN, CITY OF         ON   FLOW(T GD)     2150.00 -P SIC  4952   -1   -1
     6.90 PIPE  1 NPDES# LA0003409 DOLESE CONCRETE CO-E BATONOFF  FLOW(T GD)        1.05 -P SIC  3273   -1   -1
     6.90 PIPE  1 NPDES# LA0005584 EXXON CO USA-BATON ROUGE  ON   FLOW(T GD)    78000.00 -B SIC  2911   -1   -1
     7.34 PIPE  1 NPDES# LA0000329 ALLIED-SIGNAL, INC          ON   FLOW(T GD)     2500.00 -C SIC  2819 2869   -1
     7.34 PIPE  2 NPDES# LA0000329 ALLIED-SIGNAL, INC          ON   FLOW(T GD)       59.00 -P SIC  2819   -1   -1
     7.44 PIPE  1 NPDES# LA0002836 BIG THREE IND INC-E BATON ON   FLOW(T GD)      180.00 -P SIC  2813   -1   -1
     9.49 PIPE  1 NPDES# LA0038776 MULLINS & PICHARD BURTVILLOFF  FLOW(T GD)       -1.00 -P SIC  1311   -1   -1
    10.72 PIPE  1 NPDES# LA0036421 E BATON ROUGE CITY-PAR (CEON   FLOW(T GD)    11000.00 -P SIC  4952   -1   -1
    13.50 PIPE  1 NPDES# LA0000850 CINCLARE CNTL FCT OVN-LAW ON   FLOW(T GD)    11500.00 -B SIC  2061   -1   -1
```

REFERENCE 33

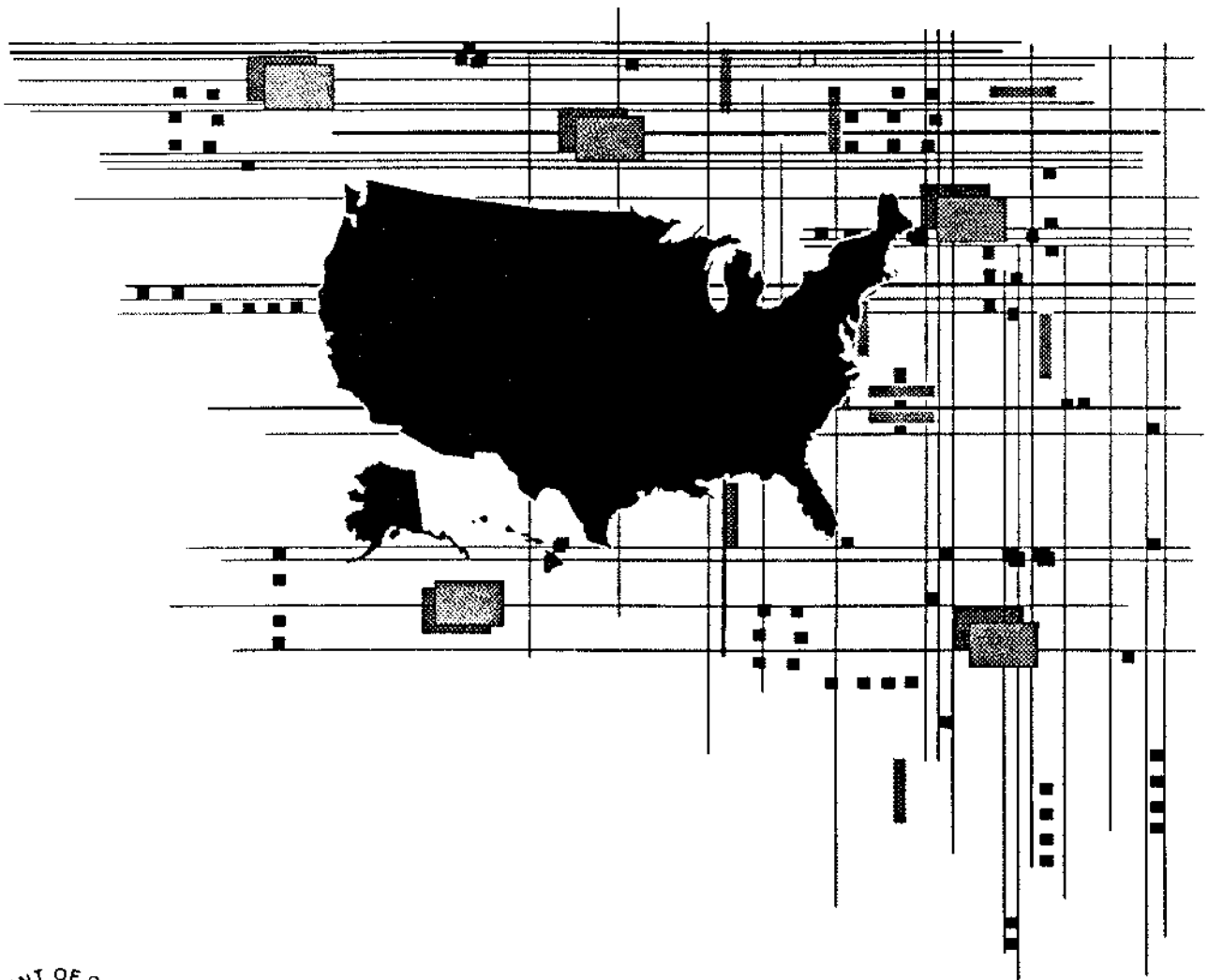
Ref 33

CURRENT POPULATION REPORTS

Special Studies

Series P-23, No. 156

Estimates of Households, for Counties: July 1,1985



U.S. Department of Commerce
BUREAU OF THE CENSUS

Table 1. Estimates of Households, for Counties: July 1, 1985—Continued

(A dash (-) represents zero or rounds to zero. Estimates are consistent with special censuses since 1980. Corrections to 1980 census counts are not included. See text concerning rounding and average population per household)

State and county	Households				Average population per household		Population			
	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85		July 1, 1985 (estimate)	April 1, 1980 (census)	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85	
			Number	Percent					Number	Percent
Louisiana—Continued										
De Soto Parish	9,900	8,956	900	10.0	2.78	2.85	27,600	25,727	1,900	7.3
East Baton Rouge Parish	138,200	124,346	13,900	11.2	2.75	2.84	392,300	366,191	26,100	7.1
East Carroll Parish	3,500	3,615	-100	-1.9	3.12	3.20	11,200	11,772	-500	-4.5
East Feliciana Parish	5,700	5,078	600	11.5	3.21	3.29	20,400	19,015	1,400	7.4
Evangeline Parish	12,100	11,249	800	7.3	2.89	2.94	35,300	33,343	1,900	5.7
Franklin Parish	8,200	8,075	200	1.9	2.90	2.94	24,300	24,141	100	0.6
Grant Parish	6,100	5,770	400	6.5	2.92	2.87	18,100	16,703	1,400	8.2
Iberia Parish	22,200	19,915	2,300	11.6	3.07	3.18	68,600	63,752	4,900	7.6
Iberville Parish	10,200	9,634	600	5.9	3.10	3.22	33,400	32,159	1,300	4.0
Jackson Parish	6,300	6,101	200	2.7	2.80	2.79	17,800	17,321	500	2.9
Jefferson Parish	173,700	155,685	18,100	11.6	2.74	2.90	478,500	454,592	23,900	5.3
Jefferson Davis Parish	11,300	10,392	900	8.3	2.93	3.08	33,300	32,168	1,200	3.6
Lafayette Parish	59,900	50,330	9,500	18.9	2.79	2.90	171,000	150,017	21,000	14.0
Lafourche Parish	28,000	25,391	2,600	10.4	3.07	3.19	87,500	82,483	5,000	6.1
La Salle Parish	6,400	6,069	300	5.2	2.68	2.78	17,300	17,004	300	1.8
Lincoln Parish	13,900	12,280	1,700	13.5	2.58	2.69	42,400	39,763	2,700	6.8
Livingston Parish	23,000	18,462	4,600	24.7	3.05	3.13	71,600	58,806	12,800	21.7
Madison Parish	5,300	5,191	100	1.8	2.90	3.04	15,600	15,975	-400	-2.7
Morehouse Parish	12,600	11,611	1,000	8.8	2.86	2.95	36,800	34,803	2,000	5.6
Natchitoches Parish	13,700	13,257	500	3.7	2.78	2.84	39,900	39,863	100	0.2
Orleans Parish	212,800	206,435	6,300	3.1	2.56	2.63	559,000	557,515	1,500	0.3
Ouachita Parish	51,000	47,322	3,700	7.8	2.73	2.84	144,300	139,241	5,000	3.6
Plaquemines Parish	8,200	7,750	400	5.5	3.17	3.27	26,600	26,049	600	2.3
Pointe Coupee Parish	8,200	7,703	500	6.3	3.05	3.12	25,000	24,045	900	3.9
Rapides Parish	48,200	44,759	3,400	7.6	2.76	2.89	139,200	135,282	3,900	2.9
Red River Parish	3,600	3,514	100	3.2	2.97	2.93	10,900	10,433	500	4.6
Richland Parish	8,100	7,222	900	12.7	2.80	3.00	23,400	22,187	1,200	5.6
Sabine Parish	9,800	8,916	800	9.5	2.78	2.81	27,400	25,280	2,100	8.2
St. Bernard Parish	23,100	20,591	2,500	12.2	2.94	3.10	68,300	64,097	4,200	6.5
St. Charles Parish	13,800	11,487	2,300	20.0	3.08	3.22	42,700	37,259	5,400	14.6
St. Helena Parish	3,400	3,072	400	11.7	3.05	3.20	10,500	9,827	600	6.4
St. James Parish	6,500	6,046	500	7.9	3.42	3.54	22,400	21,495	900	4.3
St. John the Baptist Parish	12,200	9,305	2,900	30.9	3.31	3.42	40,500	31,924	8,500	26.8
St. Landry Parish	29,000	26,823	2,200	8.2	3.03	3.11	88,600	84,128	4,400	5.3
St. Martin Parish	14,400	12,173	2,200	18.3	3.15	3.29	45,600	40,214	5,400	13.3
St. Mary Parish	21,000	20,040	1,000	5.0	3.05	3.18	64,700	64,253	400	0.7
St. Tammany Parish	46,800	35,695	11,100	31.1	2.97	3.06	140,800	110,869	30,000	27.0
Tangipahoa Parish	30,500	25,963	4,500	17.4	2.89	2.99	91,000	80,698	10,300	12.7
Tensas Parish	2,900	2,938	-100	-2.5	2.94	2.88	8,500	8,525	-100	-0.6
Terrebonne Parish	33,200	29,285	3,900	13.3	3.05	3.21	101,600	94,393	7,200	7.6
Union Parish	7,700	7,231	500	6.6	2.89	2.89	22,600	21,167	1,400	6.7
Vermilion Parish	18,300	16,170	2,100	13.3	2.88	2.98	53,200	48,458	4,700	9.8
Vernon Parish	17,700	15,465	2,300	14.6	2.94	3.00	60,300	53,475	6,800	12.7
Washington Parish	16,700	15,399	1,300	8.3	2.77	2.85	47,500	44,207	3,300	7.5
Webster Parish	17,100	15,692	1,400	8.9	2.62	2.73	45,700	43,631	2,100	4.8
West Baton Rouge Parish	6,600	5,800	800	14.6	3.13	3.28	20,900	19,086	1,800	9.5
West Carroll Parish	4,800	4,496	300	5.8	2.75	2.85	13,200	12,922	300	2.1
West Feliciana Parish	2,500	2,313	200	7.9	3.25	3.19	13,600	12,186	1,400	11.6
Winn Parish	6,100	6,059	100	1.3	2.76	2.81	17,200	17,253	-100	-0.6
Maine	432,000	395,184	36,000	9.2	2.61	2.75	1,166,000	1,124,660	41,000	3.6
Androscoggin	37,200	35,233	2,000	5.6	2.61	2.73	100,900	99,657	1,200	1.2
Aroostook	30,500	29,345	1,200	4.0	2.81	3.00	88,600	91,331	-2,700	-3.0
Cumberland	87,200	78,704	8,500	10.8	2.51	2.65	226,400	215,789	10,600	4.9
Franklin	10,500	9,424	1,100	11.7	2.69	2.77	29,300	27,098	2,200	8.1
Hancock	16,800	15,442	1,400	9.0	2.51	2.62	43,600	41,781	1,800	4.3

REFERENCE 34

Ref 39

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GEMS>

Enter program execution mode: B (batch) or I (interactive)
GEMS> i


Devil's Swamp Lake
LATITUDE   30:33:35   LONGITUDE   91:13:30      1980 POPULATION
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KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	32	0	0	295	327
S 2	0	0	0	877	0	3301	4178
S 3	0	0	0	0	10113	6072	16185
S 4	0	0	0	0	0	11	11
S 5	0	0	0	0	0	0	0
S 6	0	0	0	0	0	0	0
RING TOTALS	0	0	32	877	10113	9679	20701

```
press RETURN to continue
 Esc for ATtention, Home to SWitch    ‖      Capture Off          ‖ On: 00:13:44
```

Received [illegible] 15, 1992 by J.E. Ramsey
[illegible] Technology, Inc

REFERENCE 35

RECORD OF COMMUNICATION

Reference 35

TYPE: Telephone Call **DATE:** 02-27-92 **TIME:** 1:55 p.m.

TO: Mary Gentry
LDEQ Ground Water Protection
Section

FROM: Megistu Lemma
ICF Technology, Inc.
Dallas, Texas
214-979-3921

SUBJECT: Wellhead Protection Areas

SUMMARY OF COMMUNICATION:

I called the LDEQ to ask about the Wellhead Protection Program in the Baton Rouge Area. Ms Gentry told me that the program exists in Louisiana. It covers a 2 mile radius for unconfined aquifers and a 1 mile radius for confined aquifer. However in the Baton Rouge area the program is not in effect due to the fact that all the wells in the area are deep. Currently their priority is to cover all the alluvial aquifers which are used mostly in the northern part of the state.

WELLHEAD PROTECTION PROGRAM

STATE OF LOUISIANA

March 1990

The Department of Environmental Quality, Ground Water Protection Division has been designated as the lead agency in developing and implementing the State's Wellhead Protection Program required under Section 1428 of the Federal Safe Drinking Water Act Amendments of 1986.

DELINEATION OF WELLHEAD PROTECTION AREAS

The Department of Environmental Quality, the lead agency, will use distance as the criteria for delineation. In confined aquifers the state will use one (1) mile radius circles. For wellheads in recharge areas or unconfined (water table) aquifers, two (2) mile radius circles will be used to delineate the protection areas. These threshold distances are believed to be conservative and therefore at least over-protective of the wellhead. The state recognizes three general categories of threats to wells:

-- Direct introduction of contaminants in the immediate well area

-- Microbial (bacteriological) Contaminants

-- Chemical and Radiological Contaminants

Wellhead Protection Areas will be delineated and inventoried in the order of priority shown below. This priority sequence reflects the concept that public supply wells completed in unconfined aquifers and at relatively shallow depths are more likely to have contaminants infiltrate the aquifer and affect drinking water supplies. Recent studies on Louisiana aquifers indicate that hydraulic conductivity decreases from the youngest aquifers to the oldest.[1] This also supports the order of priority chosen. WHP Pilot project areas have been chosen to include such wells.

(1) PWS Wells in alluvial aquifers
(2) PWS Wells completed at depths of 100 feet or less
(3) PWS Wells completed at depths of 200 feet or less
(4) PWS Wells located in aquifer recharge areas

WHP Radius Distances

The one and two mile WHP radius distances chosen are believed to afford a large measure of protection to PWS wells. Lateral hydraulic conductivity estimated values for the Upper Pleistocene aquifer are 50 - 170 ft./day and 10 - 38 ft./day for the Lower Miocene aquifer. Values are based on 1980 aquifer pumping conditions and model simulation.[2] These travel times allow for evaluation of effects and relocation of wells if needed should surface or near-surface contamination occur within a WHP area.

1 Statistical Analysis of Aquifer-Test Results For Nine Regional Aquifers In Louisiana, U.S.G.S. Water-Resources Investigations Report 87-4001, p. 1.

2 Geohydrology and Regional Ground Water Flow of the Coastal Lowlands Aquifer System in Parts of Louisiana, Miss., Alabama and Texas, U.S.G.S. Water-Resources Investigations Report 88-4100, pp. 11-17.

REFERENCE 36

750 North St. Paul, Suite 700
Dallas, Texas
75201-3222
214/979-3900
Fax 214/979-3939

ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: File Reference 36

FROM: Jeff Patterson, ICF Technology, Inc.

SUBJ: Observations During Off-Site Reconnaissance Of Devil's Swamp Lake

DATE: December 11, 1991

Mengistu Lemma and I drove around the area of the site. We noted the following industries or facilities in the area: Haul-Busch Marine Inc., Schulkill Metals, Reynolds Metals, NPC Hazardous Waste Site (PPI NPL site), Acme Brick Grow Industries, Owens Fabricators, Paxon, Baton Rouge Port Commission and BFI (Rollins Environmental). We were not able to approach the site itself closer than about one quarter mile, due to gates with "No Trespassing" signs, "Private Property" signs at the Baton Rouge Port Commission property.

We noticed no homes to the west of Scenic Highway within 1 mile of the site.

REFERENCE 37

RECORD OF COMMUNICATION

Reference 37

TYPE: Telephone Call **DATE:** 02-26-92 **TIME:** 10:30 a.m.

TO:
Ed Sierra
Bart Canellas
U.S. EPA Region 6
Superfund Section
Dallas, Texas

FROM:
Mengistu Lemma
Jeffrey E. Patterson
ICF Technology, Inc.
Dallas, Texas
214-979-3921

SUBJECT: Sources for Bayou Baton Rouge and Devil's Swamp Lake sites.

SUMMARY OF COMMUNICATION:

At a conference with the EPA personnel at the EPA building, Jeff and I discussed sources for the two sites mentioned above. Because these two sites are surface water bodies which receive run-off from other locations and because all the sources and drainage pathways contributing to the contamination on the sites has not been fully determined, it was determined that for the PA Report and PA-Score, the sources would be considered *contaminated* sediments with no identified source of contamination. Therefore the Waste Characteristics score for the site would be based on contaminated sediments.

REFERENCE 38

Pat Lawrence

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

SEP 17 1986

Jerry Speir, Chair
Hazardous Waste Committee
Sierra Club, Delta Chapter
1024 Dante Street
New Orleans, Louisiana 70118

Dear Mr. Speir:

I received your letter of August 19, 1986, regarding the Hazard Ranking System (HRS) package for the Ewell Property in Devil's Swamp. In response to the site-specific issues raised in your letter, I offer the following information:

Groundwater Route Work Sheet

1. Depth to Aquifer of Concern - The depth assigned in the HRS package is correct and consistent with other applications of the HRS model. We are aware of the 1985 papers prepared by the Louisiana Department of Environmental Quality and the United States Geological Survey. However, it has not been conclusively proven that the aquifer connection exists in proximity to the site in question. I am enclosing a September 27, 1985, policy memoranda from Russel H. Wyer to Allyn M. Davis, (NPL Update #4), which addresses this issue in depth. Although the discussion in the memorandum relates specifically to the Dutchtown site, the conclusion regarding the groundwater route score is applicable to the Ewell property.

   For the scoring of the Ewell Property, the "1200-foot sand" aquifer is considered separately from upper or lower sand layers which also may bear water. Each aquifer beneath the site was scored individually and the one with the highest score is selected as the aquifer of concern.

2. Permeability of the Unsaturated Zone

   During our development of this scoring package, we discussed the appropriate score for permeability and determined that due to the presence of the confining clay layer, the score should be < 10^{-7} cm/sec. However, even if we used the next higher score of <10^{-6} - 10^{-7}, this only changes the groundwater route to 33.47 and the overall score to 23.09.

   You also incorrectly assert that there were no references for the permeability score. The original score was based on several references (Ref. 6, p. 87-88; Ref. 4, p. 12; and, Ref. 3).